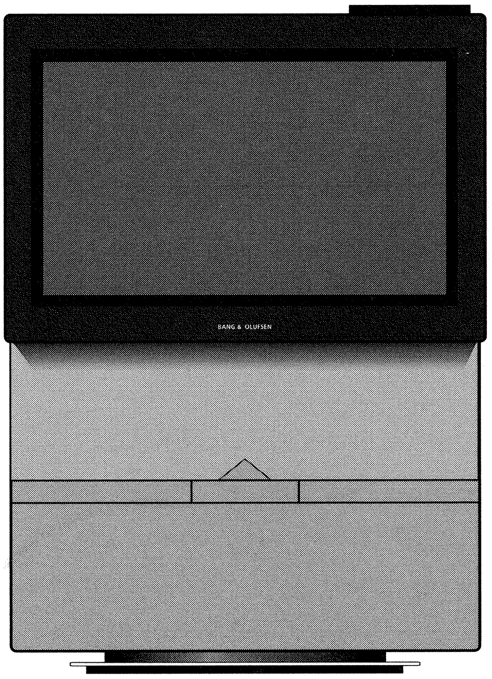
Bang&Olufsen

BeoVision Avant – TV

Type 8111, 8112, 8115, 8116, 8133,
8144, 8166, 8177, 8186



SERVICE MANUAL

Circuit Description

3540226 Danish
3540227 English
3540228 German
3540229 French
3540238 Dutch

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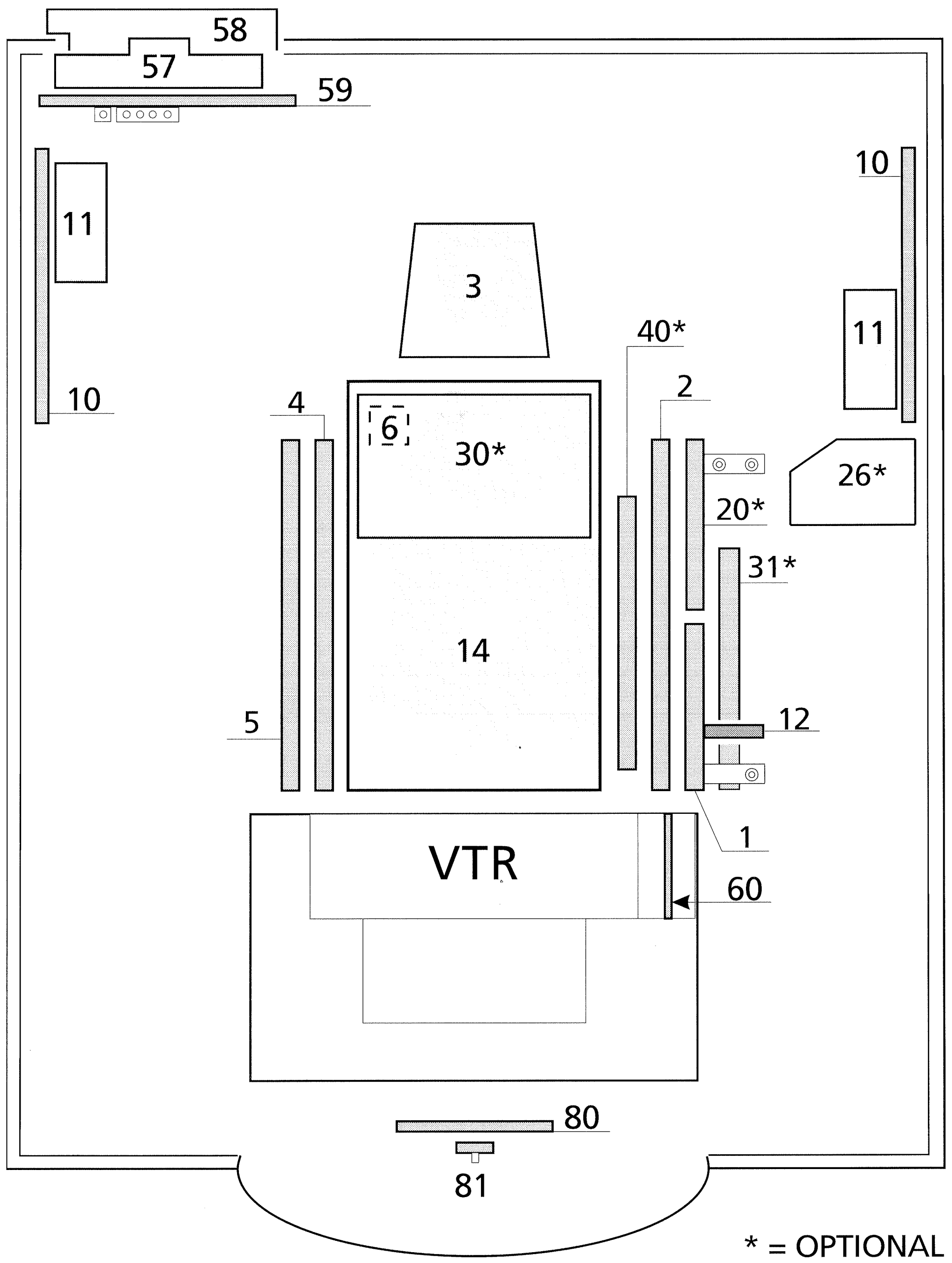
NB!
The documentation for Picture-in-Picture PCB 40 and Satellite Positioner PCB 26 will be send as a supplement to this service manual when ready.

Survey of modules



* = OPTIONAL

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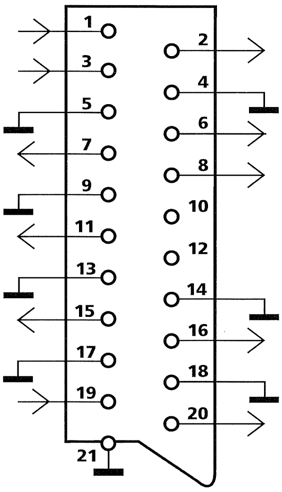
SPECIFICATION GUIDELINES FOR SERVICE USE	**BeoVision Avant**
CTV system	* See type survey
Cabinet finish	High-gloss lacquer: Pearly black, Metallic grey,
	Pearly red, Pearly green, Pearly blue
Picture tube / Visual picture	72 cm - 28" / 66 cm - 26" (16:9)
	Black Line, Black Matrix
Vision Clear	
Contrast screen	Grey glass
Colour Transient Improvement	Wideband CTI
	Adaptive & Dynamic Luminance Peaking with Noise Reduction
	Scan Velocity Modulation
	Automatic Cut-Off
	Automatic Picture Control
Operation	Beo4 Terminal (included)
	Local Control
TV tuner range	45-860 MHz: VHF, S-band, Hyper-band, UHF
No. of TV programmes	99
Station identification	Program list
Picture formats	4 Automatic selected + 2 Manual selected
Teletext	FLOF, 6 alphabet, 4 memory pages
Stereo decoder	* Nicam + A2 + A2 dual language
A2	
Channel separation	> 26 dB
Signal/noise ratio	> 50 dB weighted
NICAM (option)	
Channel separation	> 50 dB
Signal/noise ratio	> 70 dB weighted in audio mode, > 50 dB weighted in TV mode
Sound	
Speaker system	2 x Bass reflex (Net. volume 3.5 litres)
Woofer	11.5 cm (4½")
Tweeter	1.8 cm (3/4")
Sound pressure level	97 dB
Distortion 250 - 1,000 Hz	< 2% 90 dB SPL, 1m
Distortion 1,000 - 5,000 Hz	< 1.5% 90 dB SPL, 1m
Effective frequency range	50 - 20,000 Hz
Bass control	±12 dB
Treble control	±12 dB
Bass equalizer	Adaptive (ABL)
Crossover principle	Active crossover network, 24 dB/octav, Linkwitz/Riley
Crossover frequency	4500 Hz
Motorized Stand	±35 degrees turning range
	Two memory positions + neutral memory position
Other data	
Mains voltage	180 - 265 volts 50/60 Hz
Power consumption	70 watts in TV mode
Power consumption Stand-by	< 3 watts
Dimensions W x H x D/weight	73 x 103 x 58 cm/68 kg

Satellite (option)	
Sat tuner range	950-2050 MHz
Sat system tunings range &	
frequency display readout	10,700 - 12,750 MHz
No. of Satellite programmes	119
Tuner input level	-65 to -30 dBm, 75 ohm
Sound	
Frequency range	20 Hz - 15 kHz
Main mono	5.80 MHz (J17 deemphasis)
	6.50 MHz / 6.65 MHz (50 µsec deemphasis)
Bandwidth	280 kHz
Expanded sub mono	7.02 MHz / 7.20 MHz / 7.38 MHz / 7.56 MHz / 7.74 MHz /
	7.92 MHz / 8.10 MHz / 8.28 MHz
Bandwidth	130 kHz
Deemphasis	Expanded
Stereo	L 7.02 MHz, R 7.20 MHz / L 7.38 MHz, R 7.56 MHz /
	L 7.74 MHz, R 7.92 MHz / L 8.10 MHz, R 8.28 MHz
Bandwidth	130 kHz
Deemphasis	Expanded
ODU	
LNB support	Dupole
Polarity select	14/18 volt or tone switch on coax
Band switch	14/18 volt or tone switch on coax
Dolby Surround (option)	Dolby Pro Logic
Sound modes	Sound 1: Stereo in internal speakers
	Sound 2: Stereo in Power Link front speakers
	Sound 3: Dolby left/right in Power Link front speakers
	Center in internal speakers
	Sound 4: Stereo in Power Link front & rear speakers
	Sound 5: Center in internal speakers
	Dolby left/right in Power Link front speakers
	Dolby rear in Power Link rear speakers
Accessories	
NICAM module	1414400 system B/G/I/L
Satellite module	1414200
Satellite Positioner module	1414300
Power Positioner module	1414500
Picture in Picture module	1414100
Dolby Surround module	1414000
AV2 Expander box	8089086

V.TAPE (AV1), AV (AV2) & DECODER (AV3)



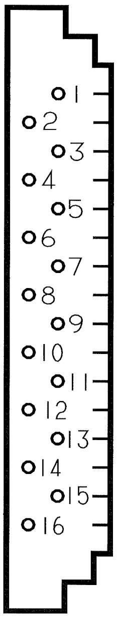
Pin 1	Audio R out 1V RMS 820 ohms	
Pin 2	Audio R in 1V RMS 47 kohms	
Pin 3	Audio L out 1V RMS 820 ohms	
Pin 4	Audio GND	
Pin 5	Blue GND	
Pin 6	Audio L in 1V RMS 47 kohms	
Pin 7*	Blue in 0.7 Vpp 75 ohms	(note 1)
Pin 8	Play voltage:	Logic 0 = 0V to 2V
		Logic 1 = 9.5V to 12V (4:3 info)
		5V = 16:9 info
	Data out (AV2 only)	
Pin 9	Green GND	
Pin 10	Not used	
Pin 11*	Green in 0.7 Vpp 75 ohms	
Pin 12	Not used	
Pin 13	Red GND	
Pin 14	Blanking GND	
Pin 15*	Red in 0.7 Vpp 75 ohms	(note 1)
Pin 16*	Blanking in Logic 0 = 0V to 0.4V	
	Logic 1 = 1V to 3V	
	R in 75 ohms	
Pin 17	Video out GND	
Pin 18	Video in GND	
Pin 19	Composite video out 1 Vpp 75 ohms	(note 2)
Pin 20	Composite video in 1 Vpp 75 ohms	(note 2)
Pin 21	Shield	

* = Not used on AV1.

Note 1: On AV2 pin 15 is also used for C in and pin 7 for C out.

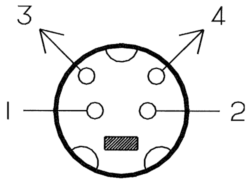
Note 2: On AV2 pin 20 is also used for Y in and pin 19 for Y out.

MASTER LINK



Pin 1	Data- -0.25V ±0.1V
Pin 2	Data+ +0.25V ±0.1V
Pin 3	ML sense
Pin 4-10	N.C.
Pin 11	-supply voltage -7V to -15V (in standby -3V to -15V)
Pin 12	+supply voltage +7V to +15V (in standby +3V to +15V)
Pin 13	Audio -L 1V Bal, Rin 2.2Mohms, Rout 75ohms
Pin 14	Audio +L 1V Bal, Rin 2.2Mohms, Rout 75Mohms
Pin 15	Audio -R 1V Bal, Rin 2.2Mohms, Rout 75ohms
Pin 16	Audio +R 1V Bal, Rin 2.2Mohms, Rout 75ohms

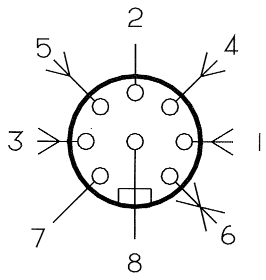
S-VHS



Pin 1	Y GND
Pin 2	C GND
Pin 3	Luminance in (Y) 1 Vpp 75 ohms
Pin 4	Chrominance in (C) 1 Vpp 75 ohms

VIDEO	Composite video in 1Vpp 75 ohms
L & R	Audio L & R in 0.2V - 2 V RMS >10 kohms
PHONES	∅ 3.5 mm 220 ohms

POWER LINK FRONT & REAR



Pin 1	PL ON = >2.5V, OFF = <0.5V
Pin 2	Signal GND
Pin 3	Audio L out 0V - 2V RMS
Pin 4	PL speaker ON = >2.5V, OFF = <0.5V
Pin 5	Audio R out 0V - 2V RMS
Pin 6	Data: High >3.5V, Low <0.8V
Pin 7	Data GND
Pin 8	Not used

Subject to change without notice

***TYPE SURVEY**				**Mounting modules for modification to other TV transmission systems**
Type	**System**		**PAL/SECAM B/G/L/L'/I**	**PAL/SECAM/NTSC B/G/D/K/M/I**
8111	B/G	EU	8008326	8008325
8112	B/G	Italy	8008326	8008325
8115	B/G	AUS	8008326	8008325
8116	B/G/D/K/M/I	TAI	8008326	
8133	I	GB	8008326	8008325
8144	B/G/L/L'	F(EU)	8008326	8008325
8166	B/G/D/K/M/I	East EU	8008326	
8177	B/G/L/L'/I	F(EU)		8008325
8186	B/G/D/K/M/I	HK	8008326	

All TV's mentioned are equiped with PAL/SECAM/NTSC colour decoder.
All TV's mentioned can be equiped with NICAM system B/G/L/I stereo decoder on request.
8008326 Tuner & IF system B/G/L/L'/I PCB.
8008325 Tuner & IF system B/G/D/K/M/I PCB.
If the TV is modified to another TV transmission system, the values in the "TV service setup" menu must be changed (see section 5 REPAIR TIPS).

BRIEF OPERATION GUIDE

Operating the on-screen menus on BeoVision Avant with Beo4.
The menus may differ with built-in kits.

Main/daily operations

TV	Switches on to the TV program you were last watching
SAT	Switches on to the satellite TV program you were last watching
0 through 9	Press to select a specific program number
▲ or ▼	Press to step through your programs

V TAPE	Press to start playing the video tape
STOP	Pauses the video tape
STOP	Press again to stop playback
GO	Press any time to start/resume playing the tape
◀◀	Press to rewind the tape
or	
▶▶	Press to fast forward the tape

∧	Press to raise the volume
∨	Press to lower the volume
•	Press to switch to stand-by

TEXT	Switches to teletext
	Press >> or << to leaf through the four memory pages; or key in the teletext page number you want
EXIT	Press to return to watching TV

LIST then	Press to display *CLOCK*
GO	Press to see the time on the Avant display Press again to remove the time

LIST then	Press to display *STAND*
◀◀ or	Press to turn the system to the left
▶▶ right	Press to turn the system to the
EXIT	Removes *STAND* from the display

LIST then	Press to display *FORMAT*
GO	Adapt the current picture to the BeoVision Avant picture screen
	Alternatively, press ▲ or ▼ to select the exact format you want
EXIT	Removes *FORMAT* from the display

MENU (General options):

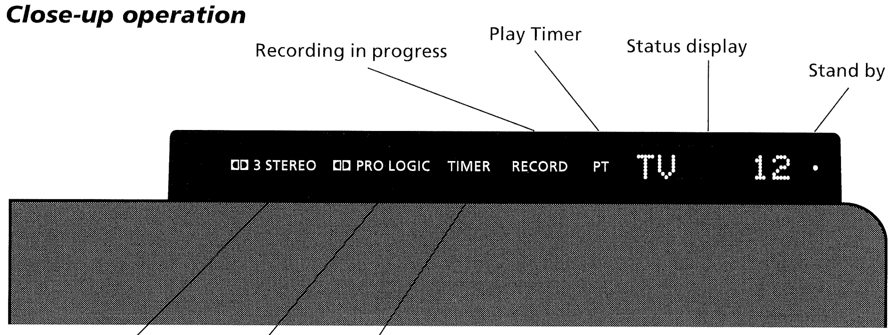
MENU then	Calls up the main menu
▼	Press to move the cursor (purple text) to the other items in the menu
	Make sure that the item/function you want is lit up in purple...
then GO	Press to call up the menu for that particular function
	Alternatively, just key in the number shown against the item you want

STOP	Press any time to return to the previous menu
or EXIT	Press to remove the menus from the screen altogether

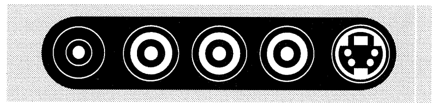
In fill-in menus:

▶▶ or ◀◀	Press to move the cursor (purple text) from item to item in the menu
	When an item turns purple, it can be changed:
0 through 9	Press to key in numbers
▼ or ▲	Press to reveal other options
	When you have filled the required information into the menu,...
GO	...press to accept it

Close-up operation

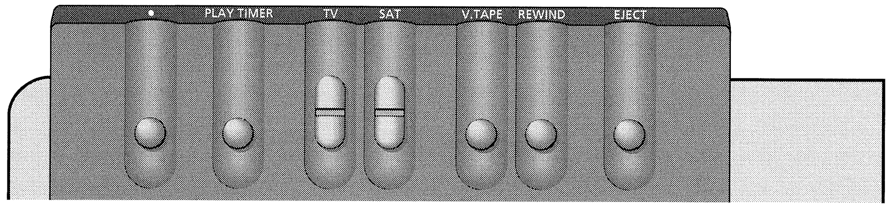


BeoVision Avant display bar *- The display bar gives information about the system and conceals the buttons for close-up operation on the back.*

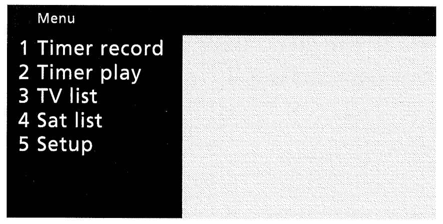


BeoVision Avant easy-access socket panel

Just below the operation panel you will find a small socket panel conveniently placed for connection of headphones and camcorder.

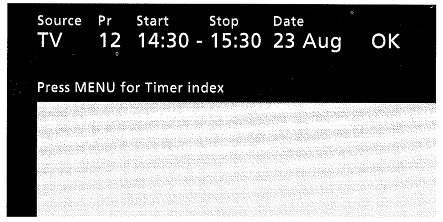


BeoVision Avant operation panel *- The buttons are placed on the rear side of the display bar.*



Menu
1 Timer record
2 Timer play
3 TV list
4 Sat list
5 Setup

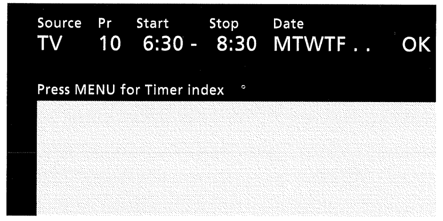
1 Timer record... Calls up the menu you must use to program a timer recording



Source	Pr	Start	Stop	Date	
TV	12	14:30 -	15:30	23 Aug	OK

Press MENU for Timer index

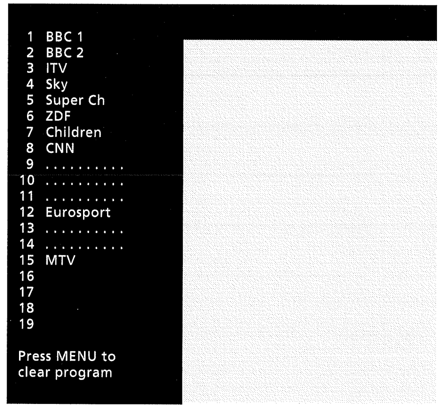
2 Timer play... Calls up the menu you must use to program the timer play/stand-by



Source	Pr	Start	Stop	Date	
TV	10	6:30 -	8:30	MTWTF . .	OK

Press MENU for Timer index

3 TV list... Calls up the TV program list

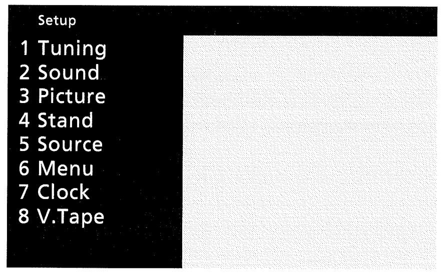


1 BBC 1
2 BBC 2
3 ITV
4 Sky
5 Super Ch
6 ZDF
7 Children
8 CNN
9 . . . .
10 . . . .
11 . . . .
12 Eurosport
13 . . . .
14 . . . .
15 MTV
16
17
18
19

Press MENU to clear program

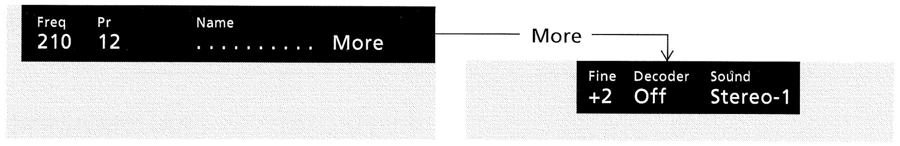
4 Sat list... Calls up the satellite program list. This item only appears if your BeoVision Avant is equipped for satellite TV reception - if not, *Setup* (see below) will be item number 4.

5 Setup... Calls up the BeoVision Avant Setup menu, which gives access to presetting the system.



Setup
1 Tuning
2 Sound
3 Picture
4 Stand
5 Source
6 Menu
7 Clock
8 V.Tape

1 Tuning... Gives access to tuning in to TV and satellite TV stations

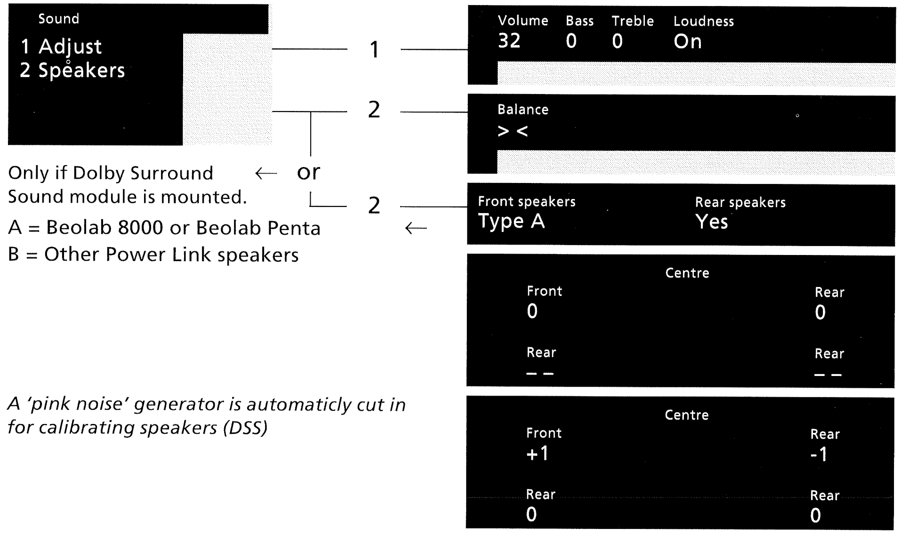


Freq	Pr	Name	
210	12	. . . .	More

More

Fine	Decoder	Sound
+2	Off	Stereo-1

2 Sound... Gives access to adjusting sound



Sound
1 Adjust
2 Speakers

Volume	Bass	Treble	Loudness
32	0	0	On

Balance
> <

Only if Dolby Surround Sound module is mounted.

A = Beolab 8000 or Beolab Penta
B = Other Power Link speakers

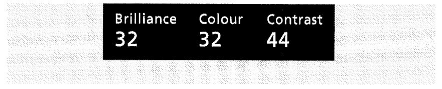
Front speakers	Rear speakers
Type A	Yes

Front	Centre	Rear
0		0
Rear		Rear
– –		– –

Front	Centre	Rear
+1		-1
Rear		Rear
0		0

A 'pink noise' generator is automaticly cut in for calibrating speakers (DSS)

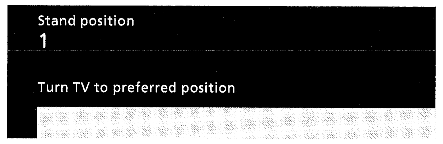
3 Picture... Gives access to adjusting the picture



Brilliance	Colour	Contrast
32	32	44

Nominal values

4 Stand... Gives access to presetting your favourite viewing angles for the motorised stand

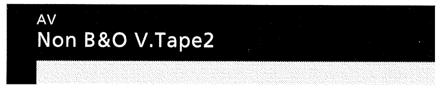


Stand position
1

Turn TV to preferred position

0 = stand-by position
1 = preferred position
2 = other stored position

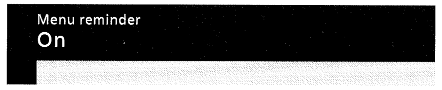
5 Source... Calls up the AV Source menu in which you must register any extra video equipment



AV
Non B&O V.Tape2

V.Tape 2, S-VHS V.Tape 2, CDV or Decoder - 2

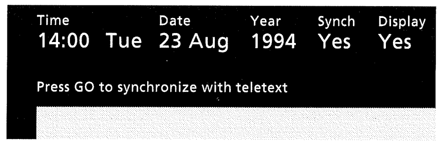
6 Menu... Gives access to switching the menu guidance function on and off



Menu reminder
On

Automatic on-screen menu text guidance

7 Clock... Gives access to setting the built in clock in the BeoVision Avant

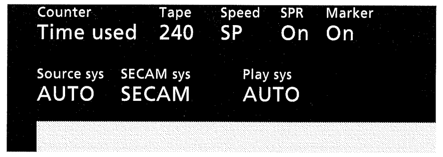


Time		Date	Year	Synch	Display
14:00	Tue	23 Aug	1994	Yes	Yes

Press GO to synchronize with teletext

Synch = teletext time synchronize ?
Display = time displayed ?

8 V.Tape... Calls up the special menus for the video tape recorder in which you must register your preferences



Counter	Tape	Speed	SPR	Marker
Time used	240	SP	On	On

Source sys	SECAM sys	Play sys
AUTO	SECAM	AUTO

Refer to VTR Service Manual for further information (B.O.G.)

Beo4

The Beo4 remote control gives you the possibility to set it up to match any Bang & Olufsen system in the best possible way. This is done by means of option programming and the add/remove functions in Beo4. Only the functions (cues) relevant for a given setup should be found visible in the display.

Option programming

Enables you to pre-program a Bang & Olufsen product setup.

		Beo4 display
●	Press and hold	
LIST	Then press shortly	*OPTION?*
GO	Calls up the list of cues	*V.OPT*
LIST	Select option type (toggle)	*A.OPT, L.OPT* *or V.OPT*
1 ↓ 6	Key in the option number	
EXIT	To leave option setup	

The BeoVision Avant can be programmed for the following setup situations:

Option 0.
Used if you want to disable remote control operation of the BeoVision Avant.

Option 1 (factory setting).
Used in a *one-room* setup either with the BeoVision Avant on its own, or in an AV integrated setup with a pair of speakers connected to the audio system.

Option 2.
Used in a *two-room* setup, or in a *one-room* setup with no speakers connected to the audio system (fully integrated AV system).

NOTE:
Please refer to the special User's Guide or Setting-up Guide for further information.

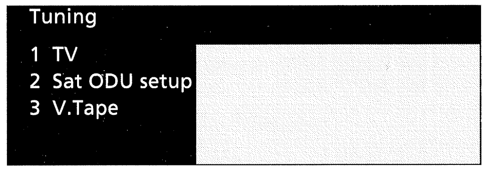
Customizing the Beo4

Enables you to pre-program the Beo4 to match any Bang & Olufsen system. Remove not relevant functions (cues), and add functions you want to appear when pressing LIST in daily use.

		Beo4 display
●	Press and hold	
LIST	Then press shortly	*OPTION?*
LIST	Select function (toggle)	*ADD* or *REMOVE* (or *OPTION?)*
GO	Calls up the list of cues	*REPEAT* or *FORMAT*
LIST	Toggle through cues	Default *ADD* cues (blinks): *REPEAT, EDIT, PAGE, MONO, RESET, TURN, RETURN, PICTURE, SOUND, BASS, TREBLE, LOUDNSS, S.STORE, SHIFT, PHONO, A.TAPE2, CDV, CD2, P-IN-P, LINK, LINK-AV, A.AUX, V.AUX, PHONE* Default *REMOVE* cues: *FORMAT, STAND, SELECT, RANDOM, TRACK, SPEAKER, CLOCK, LARGE, REVEAL, INDEX, UPDATE, MIX, SUBCODE, COUNTER, TRACKNG, LAMP, STORE, RECORD2, V.TAPE2*
GO	Press to add/remove cue	Removed cues blinks (off = *ADD* cue)
LIST	Press for next cue	
EXIT	To leave add/remove setup	

Satellite ODU-set-up

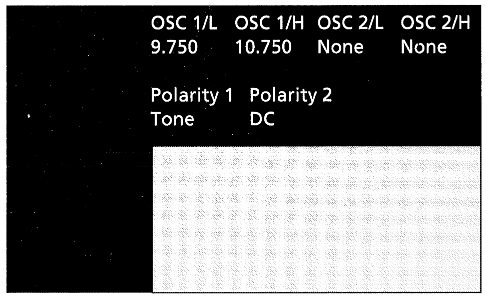
TV	TV on
MENU	Main menu
5	Set-up menu
1	Tuning menu
▼	Choose Sat in the menu
MENU	Select the special programming menu for the Out Door Unit



Tuning
1 TV
2 Sat ODU setup
3 V.Tape

GO **ODU set-up**
The satellite receiver has two inputs (1 and 2), which permits two ODU's to be connected, even if they operate within the same frequency band.

Fill in the menu with ▲ ▼, ▶▶ ◀◀ and perhaps 0 - 9.
Store changes in the menu by pressing GO or by going out of the menu by pressing EXIT



OSC 1/L	OSC 1/H	OSC 2/L	OSC 2/H
9.750	10.750	None	None
Polarity 1	Polarity 2		
Tone	DC		

Surfaces

Wipe dust off the surfaces of your BeoVision Avant using a dry, soft cloth.

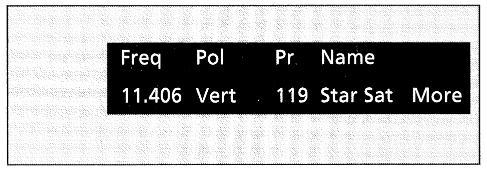
If necessary, remove grease stains or more persistent dirt with a firmly wrung lint-free cloth which you have dipped in a solution of water containing a few drops of a mild detergent.

To clean the picture screen use a mild window cleaning fluid. Make sure no streaks or traces of the cleaning fluid are left on the screen.

Tuning to satellite stations

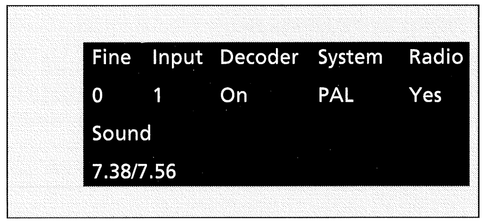
TV	TV on
MENU	Main menu
5	Set-up menu
1	Tuning menu
2	Sat tuning menu*

When the ODU setup menu has been filled in it is possible to store the programmes in the Sat-tuning menu.
Fill in the menu with ▼ ▲, ▶▶ ◀◀ and perhaps 0 - 9
See the BeoVision Avant setting-up guide for further information.



Freq	Pol	Pr	Name	
11.406	Vert	119	Star Sat	More

Select More and press GO



Fine	Input	Decoder	System	Radio
0	1	On	PAL	Yes
Sound				
7.38/7.56				

The submenu under Sat-tuning contains the more specialized programming options.
Fill in the menu with ▼ ▲, ▶▶ ◀◀

Store changes in the Sat-tuning menu by pressing GO, and abandon the menu by pressing EXIT

*Note
BeoVision Avant's satellite receiver is preprogrammed from the factory with all the stations currently being transmitted by the Astra satellites.

EXPLANATION OF DIAGRAM

Type numbers of transistors and ICs are indicated on the diagrams. If the position number is followed by an asterisk the spare part number must always be used because the component in question has been specially selected, e.g. TR102*.

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the print and the component side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.

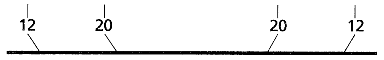
Control circuit

In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. $\overline{\text{ST.BY.}}$ = low in the stand-by mode or ST.BY. = high in the stand-by mode.

Wiring connections

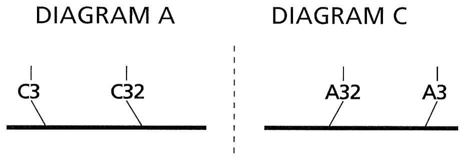
The wiring connections on the diagrams are assembled in 'bundles'.
The individual wires are provided with one of the following codes:

INTERNAL CONNECTION ON ONE DIAGRAM PAGE



CONNECTION TO ANOTHER DIAGRAM PAGE

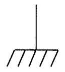
Internal connections on a diagram page are indicated by a number.
The bend of the wire indicates in wich direction the other end of the wire is found.

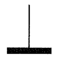


A connection to another diagram page is indicated by a number as well as by letter of the diagram to which the connection leads.

Ground symbols

Two different ground symbols are used in the diagrams:.


= Ground that is not galvanically separated from the mains. (Used in diagram M, PCB4).


= Ground

Signal paths and IC markings

The signal paths are shown in the diagrams by means of semibold lines and arrow heads.
As shown, two different types of arrow head are used:

—>— = Video, luminance and chrominance signals

—>>— = Sound signal

The arrow heads shown in the IC pins tell wether the pins tell whether the pin indicated is an input or an output.

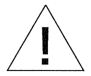
Measuring conditions

Measure all DC voltages in relation to ground and with voltmeter or oscilloscope with inner resistance of at least 2Mohm.

Measure DC voltages and oscilloscope pictures in TV mode at an UHF aerial (colour bar) of approx. 1.5mV. Brilliance step 32, contrast step 44 and colour saturation step 32.

Oscilloscope pictures on the signal path in connection with the AV2 socket on diagram H and I are measured with Y/C signal on AV2.

Symbol of safety components



When replacing components with this symbol, the same type has to be used, also the same values for ohm and watt.
The new component is to be mounted in the same way as the replaced one.

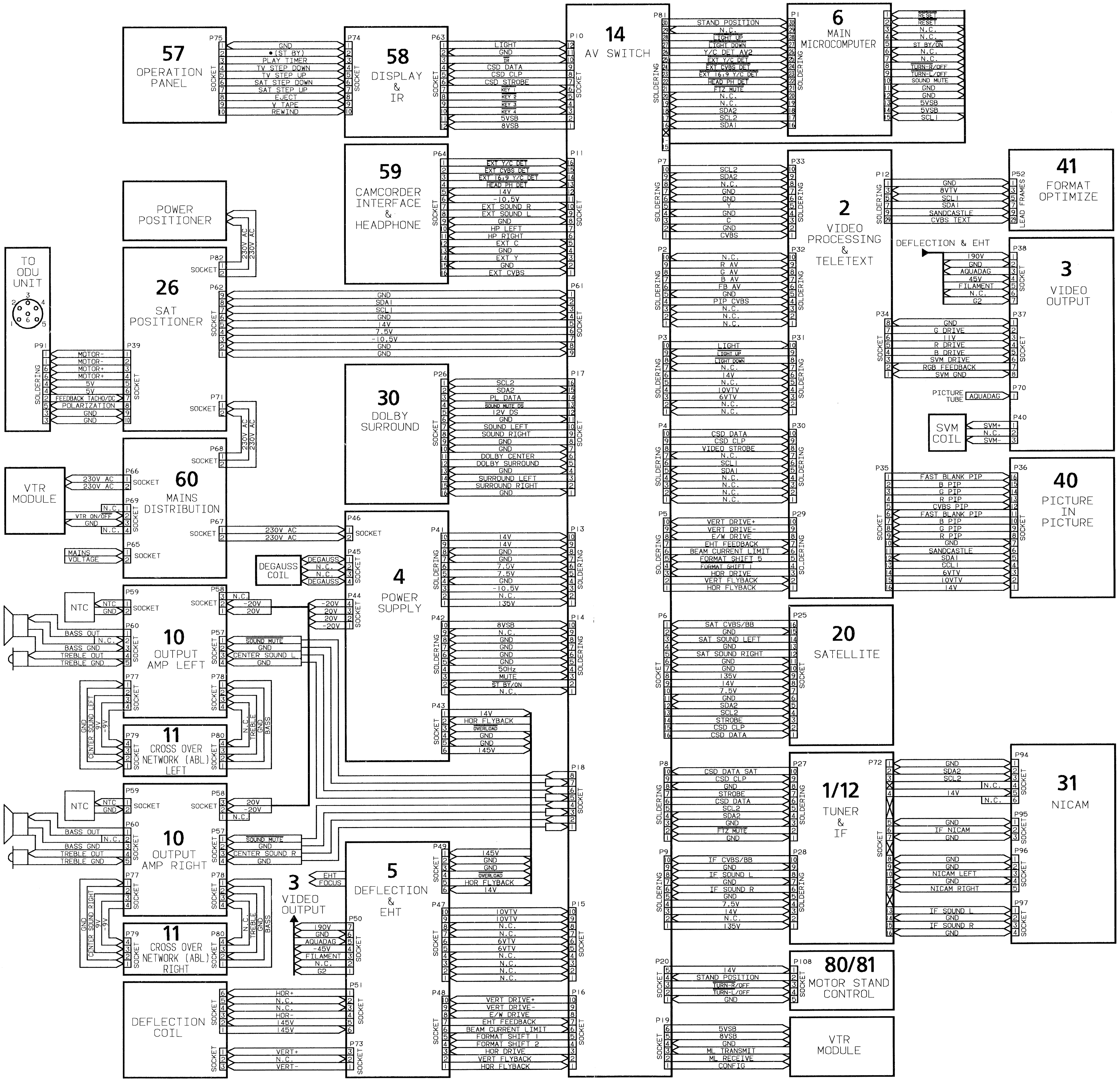
Lithium battery

ADVARSEL
LITHIUMBATTERI - EKSPLOSIONSFARE
UDSKIFTNING MÅ KUN FORETAGES AF EN SAGKYNDIG
OG SOM BESKREVET I SERVICE MANUAL

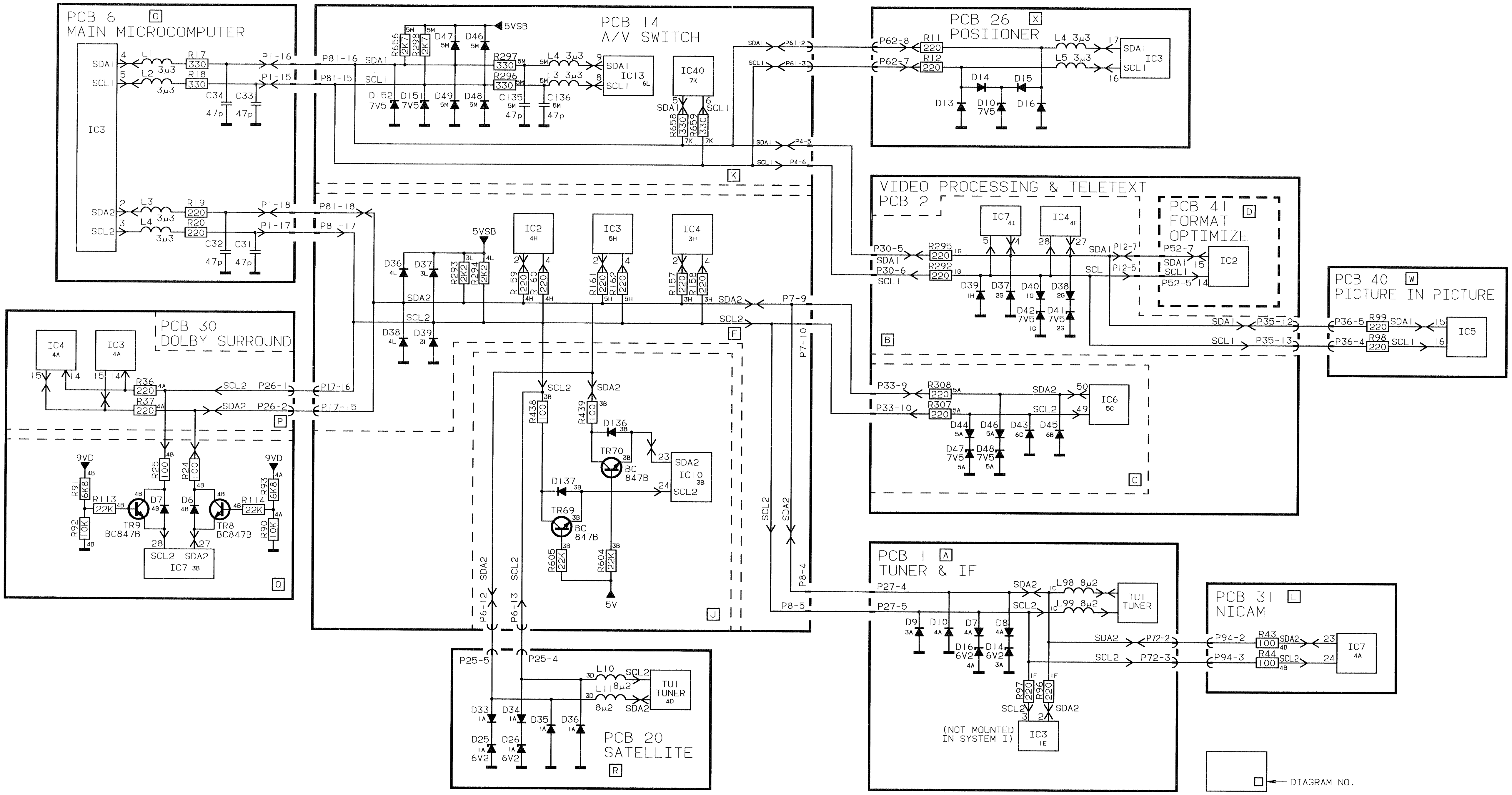
WARNING
LITHIUM BATTERY - RISK OF EXPLOSION
TO BE REPLACED BY QUALIFIED SERVICEMAN ONLY
AND AS DESCRIBED IN THE MANUAL

WARNING
Short-circuit and overcharging of some types of lithium batteries may result in a violent explosion.
When replacing the lithium battery in this set, note the following:
Use **only** batteries at the same make and type as mentioned in this service manual (see page 3-15).
Place the battery exactly like the old one.

WIRING DIAGRAM

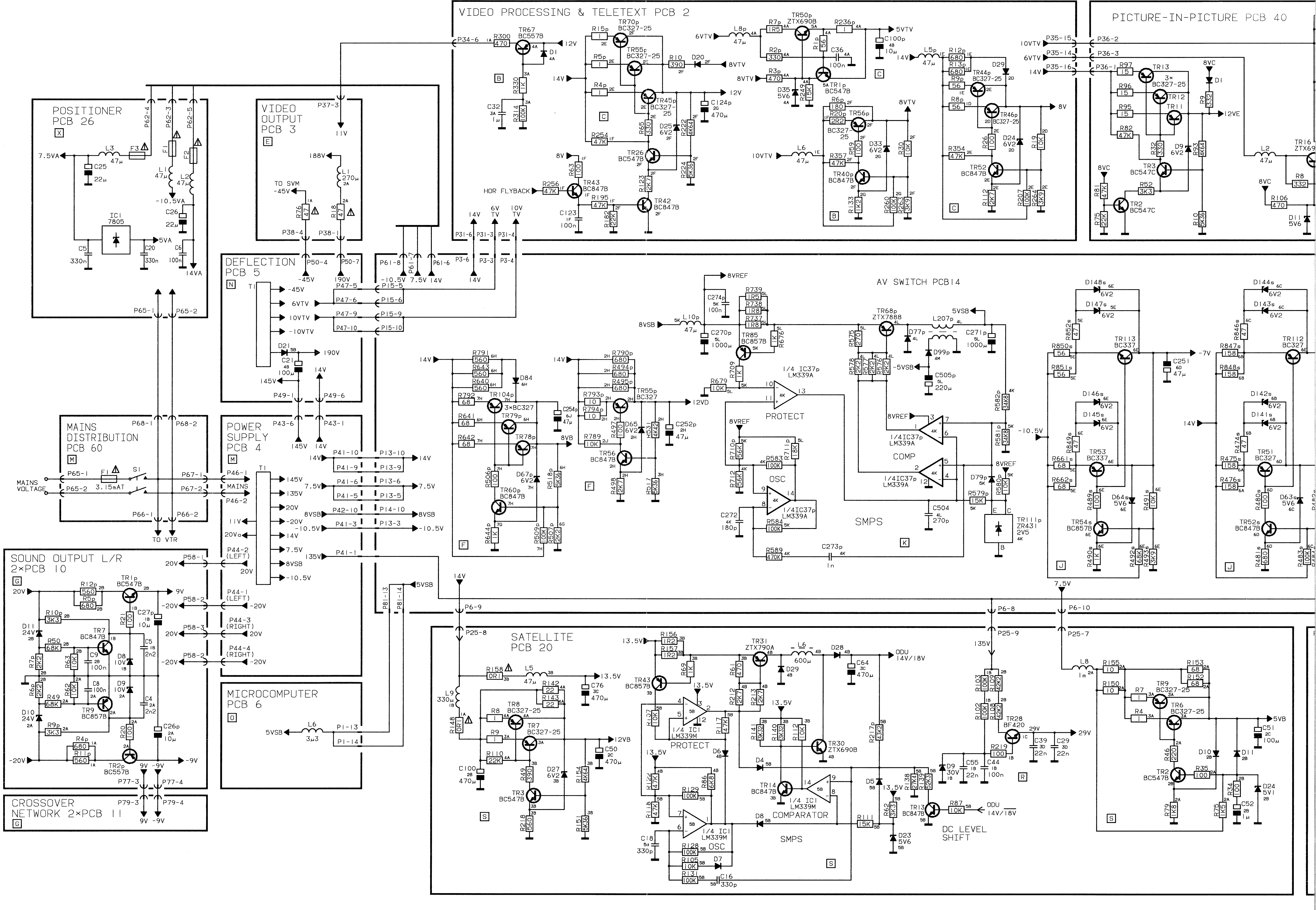

57
OPERATION PANEL
P75
SOCKET
GND
•(ST BY)
PLAY TIMER
TV STEP DOWN
TV STEP UP
SAT STEP DOWN
SAT STEP UP
EJECT
V TAPE
REWIND
P74
58
DISPLAY & IR
P63
LIGHT
GND
IR
CSD DATA
CSD CLP
CSD STROBE
KEY 1
KEY 2
KEY 3
KEY 4
5VSB
8VSB
P10
14
AV SWITCH
P81
STAND POSITION
N.C.
LIGHT UP
LIGHT DOWN
Y/C DET AV2
EXT Y/C DET
EXT CVBS DET
EXT 1&9 Y/C DET
HEAD PH DET
FTZ MUTE
N.C.
N.C.
SDA2
SCL2
SDA1
SOLDERING
P1
6
MAIN MICROCOMPUTER
RESET
RESET
N.C.
N.C.
ST BY/ON
N.C.
N.C.
TURN-R/OFF
TURN-L/OFF
SOUND MUTE
GND
GND
5VSB
5VSB
SCL1
59
CAMCORDER INTERFACE & HEADPHONE
P64
P11
EXT Y/C DET
EXT CVBS DET
EXT 1&9 Y/C DET
HEAD PH DET
14V
-10.5V
EXT SOUND R
EXT SOUND L
GND
HP LEFT
HP RIGHT
EXT C
GND
EXT Y
GND
EXT CVBS
POWER POSITIONER
230V AC
230V AC
TO ODU UNIT
P91
P39
MOTOR-
MOTOR-
MOTOR+
MOTOR+
5V
5V
FEEDBACK TACHO/DC
POLARIZATION
GND
GND
26
SAT POSITIONER
P82
P62
P61
GND
SDA1
SCL1
GND
14V
7.5V
-10.5V
GND
GND
P71
P68
VTR MODULE
P66
60
MAINS DISTRIBUTION
230V AC
230V AC
P69
N.C.
VTR ON/OFF
GND
N.C.
P67
230V AC
230V AC
P65
MAINS VOLTAGE
30
DOLBY SURROUND
P26
P17
SCL2
SDA2
PL DATA
SOUND MUTE DS
12V DS
GND
SOUND LEFT
SOUND RIGHT
GND
GND
DOLBY CENTER
DOLBY SURROUND
GND
SURROUND LEFT
SURROUND RIGHT
GND
P46
4
POWER SUPPLY
P41
P13
14V
14V
GND
GND
7.5V
7.5V
GND
-10.5V
N.C.
135V
DEGAUSS COIL
P45
DEGAUSS
N.C.
N.C.
DEGAUSS
P44
-20V
20V
20V
-20V
P42
P14
8VSB
N.C.
GND
GND
GND
GND
50Hz
MUTE
ST BY/ON
N.C.
P43
14V
HOR FLYBACK
OVERLOAD
GND
GND
145V
NTC
P59
P58
N.C.
-20V
20V
10
OUTPUT AMP LEFT
P60
BASS OUT
N.C.
BASS GND
TREBLE OUT
TREBLE GND
P57
SOUND MUTE
CENTER SOUND L
GND
P77
P78
11
CROSS OVER NETWORK (ABL) LEFT
P79
P80
GND
CENTER SOUND LEFT
9V
-9V
N.C.
TREBLE
GND
BASS
P18
10
OUTPUT AMP RIGHT
20V
-20V
N.C.
SOUND MUTE
GND
CENTER SOUND R
GND
11
CROSS OVER NETWORK (ABL) RIGHT
CENTER SOUND RIGHT
3
VIDEO OUTPUT
EHT
FOCUS
P50
190V
GND
AQUADAG
-45V
FILAMENT
N.C.
G2
5
DEFLECTION & EHT
P49
145V
GND
GND
OVERLOAD
HOR FLYBACK
14V
P47
P15
10VTV
10VTV
N.C.
N.C.
6VTV
6VTV
N.C.
N.C.
N.C.
N.C.
DEFLECTION COIL
P51
HOR+
N.C.
N.C.
HOR-
145V
145V
P73
VERT+
N.C.
VERT-
P48
P16
VERT DRIVE+
VERT DRIVE-
E/W DRIVE
EHT FEEDBACK
BEAM CURRENT LIMIT
FORMAT SHIFT 1
FORMAT SHIFT 2
HOR DRIVE
VERT FLYBACK
HOR FLYBACK
P7
P33
2
VIDEO PROCESSING & TELETEXT
SCL2
SDA2
N.C.
GND
GND
Y
GND
C
GND
CVBS
P12
P52
41
FORMAT OPTIMIZE
GND
8VTV
SCL1
SDA1
SANDCASTLE
CVBS TEXT
LEAD FRAMES
DEFLECTION & EHT
P38
190V
GND
AQUADAG
45V
FILAMENT
N.C.
G2
3
VIDEO OUTPUT
P2
P32
N.C.
R AV
G AV
B AV
FB AV
GND
PIP CVBS
N.C.
N.C.
N.C.
P34
P37
GND
G DRIVE
11V
R DRIVE
B DRIVE
SVM DRIVE
RGB FEEDBACK
SVM GND
P3
P31
LIGHT
LIGHT UP
LIGHT DOWN
N.C.
14V
N.C.
10VTV
6VTV
N.C.
N.C.
PICTURE TUBE
AQUADAG
P70
P40
SVM COIL
SVM+
N.C.
SVM-
P4
P30
CSD DATA
CSD CLP
VIDEO STROBE
N.C.
SCL1
SDA1
N.C.
N.C.
N.C.
P35
P36
40
PICTURE IN PICTURE
FAST BLANK PIP
B PIP
G PIP
R PIP
CVBS PIP
FAST BLANK PIP
B PIP
G PIP
R PIP
GND
SANDCASTLE
SDA1
SCL1
6VTV
10VTV
14V
P5
P29
VERT DRIVE+
VERT DRIVE-
E/W DRIVE
EHT FEEDBACK
BEAM CURRENT LIMIT
FORMAT SHIFT 5
FORMAT SHIFT 1
HOR DRIVE
VERT FLYBACK
HOR FLYBACK
P6
P25
20
SATELLITE
SAT CVBS/BB
GND
SAT SOUND LEFT
GND
SAT SOUND RIGHT
GND
GND
135V
14V
7.5V
GND
SDA2
SCL2
STROBE
CSD CLP
CSD DATA
P8
P27
1/12
TUNER & IF
P72
CSD DATA SAT
CSD CLP
GND
STROBE
CSD DATA
SCL2
SDA2
GND
FTZ MUTE
GND
P94
31
NICAM
GND
SDA2
SCL2
14V
N.C.
N.C.
P95
GND
IF NICAM
GND
P9
P28
IF CVBS/BB
GND
IF SOUND L
GND
IF SOUND R
GND
7.5V
14V
N.C.
135V
P96
GND
GND
NICAM LEFT
GND
NICAM RIGHT
P97
IF SOUND L
GND
IF SOUND R
GND
P20
P108
80/81
MOTOR STAND CONTROL
14V
STAND POSITION
TURN-R/OFF
TURN-L/OFF
GND
P19
VTR MODULE
5VSB
8VSB
GND
ML TRANSMIT
ML RECEIVE
CONFIG

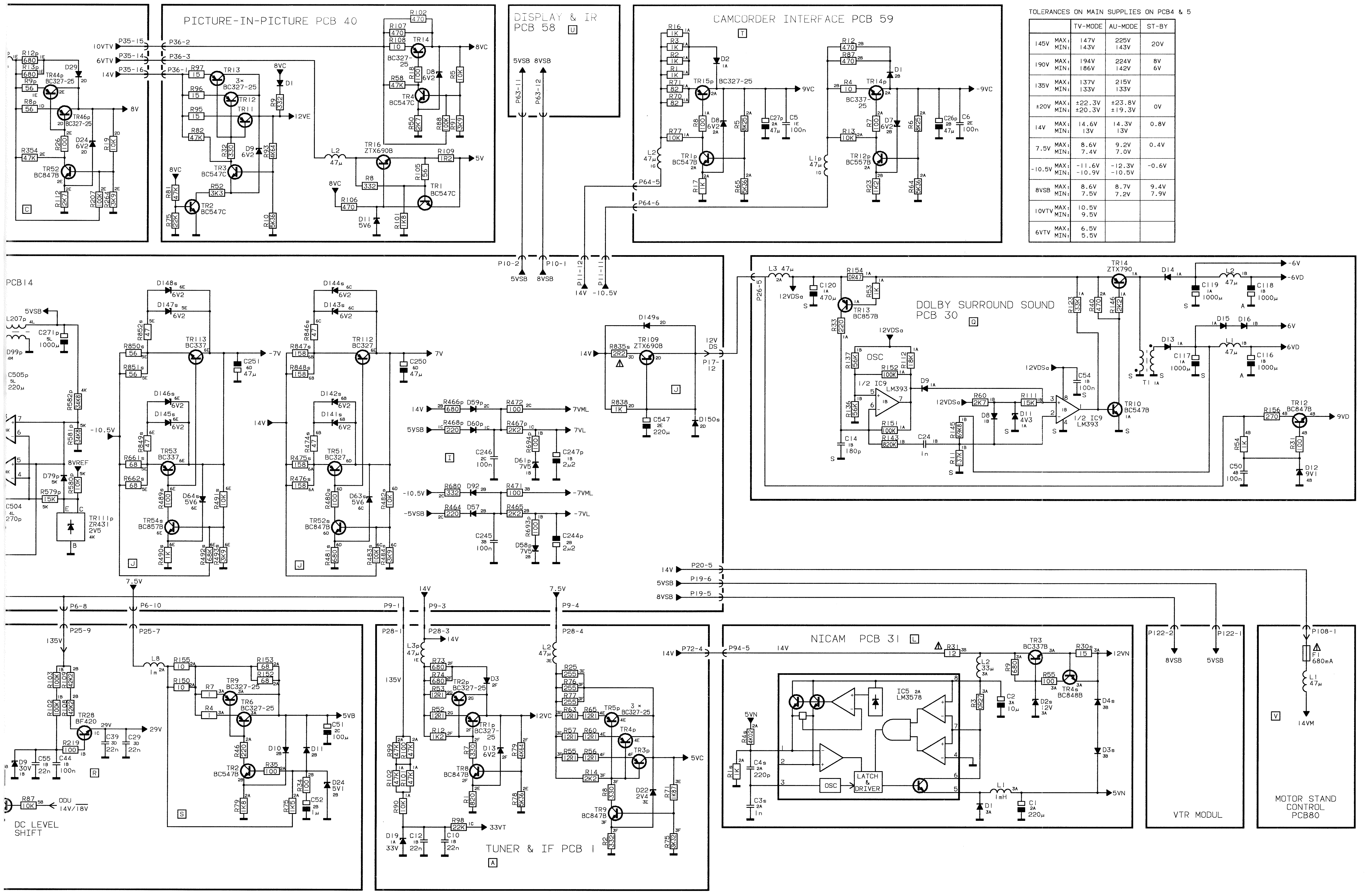
BLOCK DIAGRAM I^{2}C BUS


PCB 6 O
MAIN MICROCOMPUTER
IC3
SDA1
SCL1
SDA2
SCL2
L1 3µ3
L2 3µ3
L3 3µ3
L4 3µ3
R17 330
R18 330
R19 220
R20 220
C34 47p
C33 47p
C32 47p
C31 47p
P1-16
P1-15
P1-18
P1-17
PCB 14
A/V SWITCH
P81-16
P81-15
P81-18
P81-17
5VSB
R656 2K7
R298 2K7
D47
D46
D152 7V5
D151 7V5
D49
D48
R297 330
R296 330
C135 47p
C136 47p
IC13
IC40
R658 330
R659 330
SDA1 P61-2
SCL1 P61-3
SDA1 P4-5
SCL1 P4-6
K
IC2
IC3
IC4
D36
D37
D38
D39
R293 2K2
R294 2K2
R159 220
R160 220
R161 220
R162 220
R157 220
R158 220
SDA2
SCL2
P7-9
P7-10
F
SCL2
SDA2
R438 100
R439 100
D136
TR70
BC 847B
IC10
D137
TR69
BC 847B
R605 22K
R604 22K
5V
J
P6-12
P6-13
P8-4
P8-5
PCB 30
DOLBY SURROUND
IC4
IC3
R36 220
R37 220
SCL2 P26-1
SDA2 P26-2
P17-16
P17-15
P
9VD
R91 6K8
R92 10K
R113 22K
TR9 BC847B
D7
R25 100
R24 100
D6
TR8 BC847B
R114 22K
R93 6K8
R90 10K
IC7
Q
PCB 20
SATELLITE
P25-5
P25-4
L10
L11 8µ2
TU1 TUNER
D33
D34
D35
D36
D25 6V2
D26 6V2
R
PCB 26 X
POSIIONER
P62-8
P62-7
R11 220
R12 220
L4 3µ3
L5 3µ3
IC3
D14
D15
D13
D10 7V5
D16
VIDEO PROCESSING & TELETEXT
PCB 2
IC7
IC4
P30-5
P30-6
R295 220
R292 220
D39
D37
D40
D38
D42 7V5
D41 7V5
P12-7
P12-5
PCB 41 D
FORMAT
OPTIMIZE
P52-7
P52-5
IC2
SDA1 P35-12
SCL1 P35-13
B
P33-9
P33-10
R308 220
R307 220
IC6
D44
D46
D43
D45
D47 7V5
D48 7V5
C
PCB 40 W
PICTURE IN PICTURE
P36-5
P36-4
R99 220
R98 220
IC5
PCB 1 A
TUNER & IF
P27-4
P27-5
L98 8µ2
L99 8µ2
TU1 TUNER
D9
D10
D7
D8
D16 6V2
D14 6V2
SDA2 P72-2
SCL2 P72-3
R97 220
R96 220
IC3
(NOT MOUNTED IN SYSTEM I)
PCB 31 L
NICAM
P94-2
P94-3
R43 100
R44 100
IC7
DIAGRAM NO.

2-4
BLOCK DIAGRAM

BLOCK DIAGRAM FOR POWER SUPPLIES


POSITIONER PCB 26
VIDEO OUTPUT PCB 3
VIDEO PROCESSING & TELETEXT PCB 2
PICTURE-IN-PICTURE PCB 40
DEFLECTION PCB 5
AV SWITCH PCB14
MAINS DISTRIBUTION PCB 60
POWER SUPPLY PCB 4
MAINS VOLTAGE
F1 3.15mAT
TO VTR
SOUND OUTPUT L/R 2×PCB 10
MICROCOMPUTER PCB 6
CROSSOVER NETWORK 2×PCB 11
SATELLITE PCB 20
PROTECT
OSC
COMP
SMPS
COMPARATOR
DC LEVEL SHIFT
HOR FLYBACK
TO SVM -45V
ODU 14V/18V
1/4 IC37p LM339A
1/4 IC1 LM339M
IC1 7805
TR50p ZTX690B
TR68p ZTX7888
TR31 ZTX790A
TR30 ZTX690B
TR28 BF420
TR111p ZR431 2V5
7.5VA
5VA
14VA
-10.5VA
188V
190V
145V
135V
20V
-20V
8VSB
5VSB
8VREF
12VD
12VB
12VE
5VB
29V
13.5V
-9V
9V

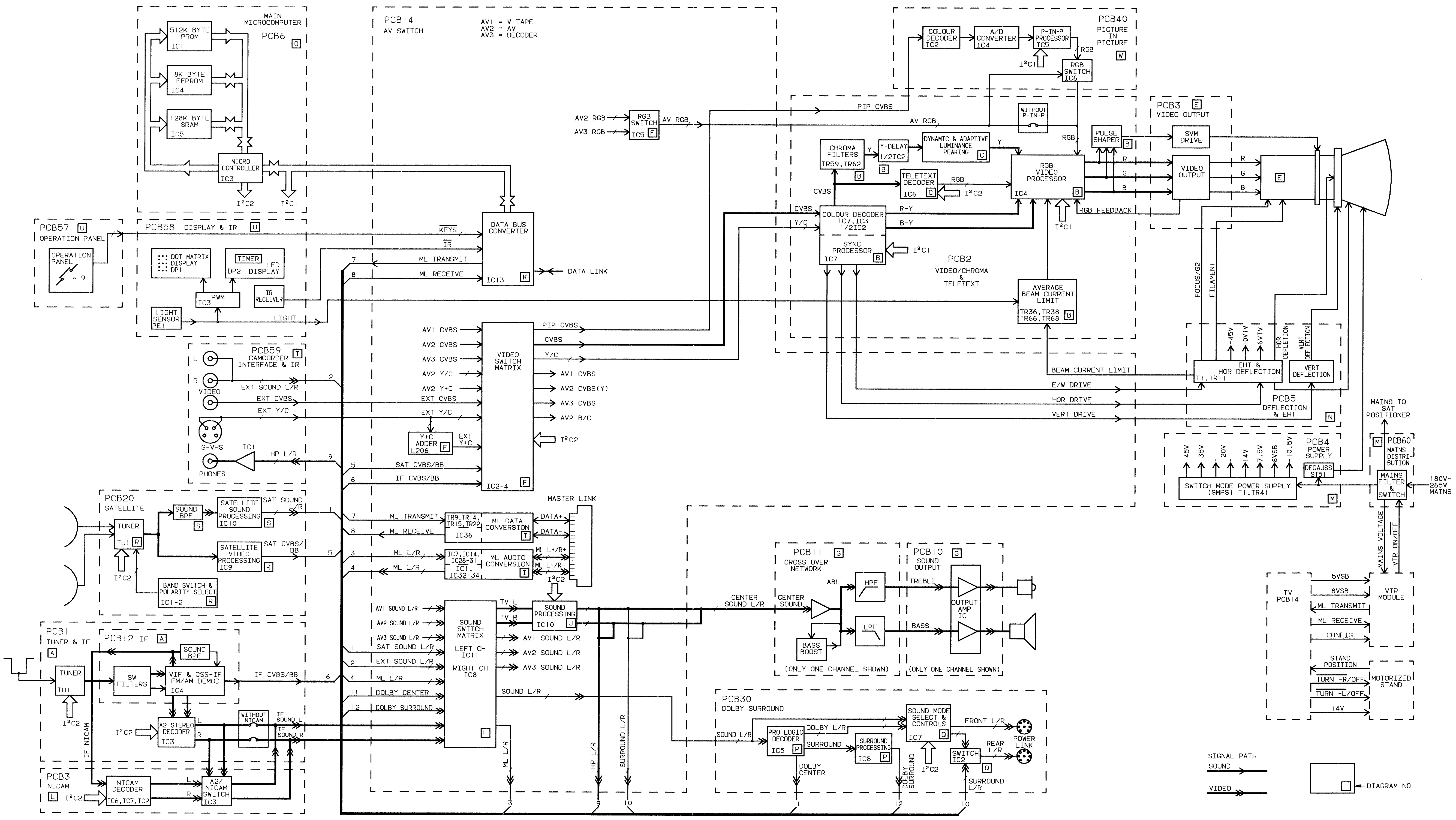

PICTURE-IN-PICTURE PCB 40
DISPLAY & IR PCB 58 U
CAMCORDER INTERFACE PCB 59 T
DOLBY SURROUND SOUND PCB 30 Q
NICAM PCB 31 L
TUNER & IF PCB 1 A
VTR MODUL
MOTOR STAND CONTROL PCB80
V
PCB14
DC LEVEL SHIFT
C
J
I
R
S
10VTV
6VTV
14V
8V
8VC
12VE
5V
9VC
-9VC
5VSB
8VSB
-7V
7V
7VML
7VL
-7VML
-7VL
-10.5V
12V DS
-6V
-6VD
6V
6VD
9VD
12VN
5VC
5VN
5VB
29V
33VT
12VC
135V
7.5V
14VM
OSC
LATCH & DRIVER
IC5 LM3578
1/2 IC9 LM393
F1 680mA
ODU 14V/18V

TOLERANCES ON MAIN SUPPLIES ON PCB4 & 5

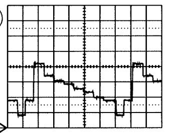
		TV-MODE	AU-MODE	ST-BY
145V	MAX:	147V	225V	20V
	MIN:	143V	143V	
190V	MAX:	194V	224V	8V
	MIN:	186V	142V	6V
135V	MAX:	137V	215V	
	MIN:	133V	133V	
±20V	MAX:	±22.3V	±23.8V	0V
	MIN:	±20.3V	±19.3V	
14V	MAX:	14.6V	14.3V	0.8V
	MIN:	13V	13V	
7.5V	MAX:	8.6V	9.2V	0.4V
	MIN:	7.4V	7.0V	
-10.5V	MAX:	-11.6V	-12.3V	-0.6V
	MIN:	-10.9V	-10.5V	
8VSB	MAX:	8.6V	8.7V	9.4V
	MIN:	7.5V	7.2V	7.9V
10VTV	MAX:	10.5V		
	MIN:	9.5V		
6VTV	MAX:	6.5V		
	MIN:	5.5V		

2-5
BLOCK DIAGRAM

OVERALL BLOCK DIAGRAM


MAIN MICROCOMPUTER
PCB6 D
512K BYTE PROM IC1
8K BYTE EEPROM IC4
128K BYTE SRAM IC5
MICRO CONTROLLER IC3
I²C2
I²C1
PCB57 U
OPERATION PANEL
OPERATION PANEL × 9
PCB58 DISPLAY & IR U
DOT MATRIX DISPLAY DP1
TIMER
LED DP2 DISPLAY
PWM IC3
IR RECEIVER
LIGHT SENSOR PE1
LIGHT
KEYS
IR
ML TRANSMIT
ML RECEIVE
DATA BUS CONVERTER IC13 K
DATA LINK
PCB14 AV SWITCH
AV1 = V TAPE
AV2 = AV
AV3 = DECODER
AV2 RGB
AV3 RGB
RGB SWITCH IC5 F
AV RGB
PCB59 T CAMCORDER INTERFACE & IR
L
R
VIDEO
EXT SOUND L/R
EXT CVBS
EXT Y/C
S-VHS
IC1
HP L/R
PHONES
AV1 CVBS
AV2 CVBS
AV3 CVBS
AV2 Y/C
AV2 Y+C
EXT CVBS
EXT Y/C
Y+C ADDER L206 F
EXT Y+C
VIDEO SWITCH MATRIX IC2-4 F
PIP CVBS
CVBS
Y/C
AV1 CVBS
AV2 CVBS(Y)
AV3 CVBS
AV2 B/C
I²C2
SAT CVBS/BB
IF CVBS/BB
PCB20 SATELLITE
TUNER TU1 R
SOUND BPF S
SATELLITE SOUND PROCESSING IC10 S
SAT SOUND L/R
SATELLITE VIDEO PROCESSING IC9 R
SAT CVBS/BB
BAND SWITCH & POLARITY SELECT IC1-2 R
I²C2
ML TRANSMIT
ML RECEIVE
TR9,TR14, TR15,TR22 IC36
ML DATA CONVERSION I
DATA+
DATA-
MASTER LINK
ML L/R
IC7,IC14, IC28-31, IC1, IC32-34
ML AUDIO CONVERSION I
ML L+/R+
ML L-/R-
I²C2
PCB1 TUNER & IF A
TUNER TU1
I²C2
PCB12 IF A
SW FILTERS
SOUND BPF
VIF & QSS-IF FM/AM DEMOD IC4
IF CVBS/BB
A2 STEREO DECODER IC3
I²C2
WITHOUT NICAM
IF SOUND L
IF SOUND R
IF NICAM
PCB31 NICAM L
NICAM DECODER IC6,IC7,IC2
I²C2
A2/ NICAM SWITCH IC3
AV1 SOUND L/R
AV2 SOUND L/R
AV3 SOUND L/R
SAT SOUND L/R
EXT SOUND L/R
ML L/R
DOLBY CENTER
DOLBY SURROUND
SOUND SWITCH MATRIX LEFT CH IC11 RIGHT CH IC8 H
TV L
TV R
SOUND PROCESSING IC10 J
AV1 SOUND L/R
AV2 SOUND L/R
AV3 SOUND L/R
SOUND L/R
ML L/R
HP L/R
SURROUND L/R
1 2 3 4 5 6 7 8 9 10 11 12
PCB40 PICTURE IN PICTURE W
COLOUR DECODER IC2
A/D CONVERTER IC4
P-IN-P PROCESSOR IC5
RGB
I²C1
RGB SWITCH IC6
PIP CVBS
AV RGB
WITHOUT P-IN-P
CHROMA FILTERS TR59,TR62 B
Y-DELAY 1/2IC2 B
DYNAMIC & ADAPTIVE LUMINANCE PEAKING C
Y
TELETEXT DECODER IC6 C
RGB
I²C2
RGB VIDEO PROCESSOR IC4 B
PULSE SHAPER B
CVBS
Y/C
COLOUR DECODER IC7,IC3 1/2IC2
SYNC PROCESSOR IC7 B
R-Y
B-Y
I²C1
RGB FEEDBACK
PCB2 VIDEO/CHROMA & TELETEXT
AVERAGE BEAM CURRENT LIMIT TR36,TR38 TR66,TR68 B
BEAM CURRENT LIMIT
E/W DRIVE
HOR DRIVE
VERT DRIVE
PCB3 E VIDEO OUTPUT
SVM DRIVE
VIDEO OUTPUT
R
G
B
E
FOCUS/G2
FILAMENT
45V
0VTV
6VTV
HOR DEFLECTION
VERT DEFLECTION
EHT & HOR DEFLECTION TR1,TR11
VERT DEFLECTION
PCB5 DEFLECTION & EHT N
MAINS TO SAT POSITIONER
145V 135V 20V 14V 7.5V 8VSB 10.5V
PCB4 POWER SUPPLY
DEGAUSS ST51
SWITCH MODE POWER SUPPLY (SMPS) T1,TR41 M
PCB60 M MAINS DISTRIBUTION
MAINS FILTER & SWITCH
180V-265V MAINS
MAINS VOLTAGE
VTR ON/OFF
CENTER SOUND L/R
PCB11 G CROSS OVER NETWORK
CENTER SOUND
ABL
HPF
LPF
BASS BOOST
(ONLY ONE CHANNEL SHOWN)
PCB10 G SOUND OUTPUT
TREBLE
BASS
OUTPUT AMP IC1
(ONLY ONE CHANNEL SHOWN)
PCB30 DOLBY SURROUND
SOUND L/R
PRO LOGIC DECODER IC5 P
DOLBY L/R
SURROUND
SURROUND PROCESSING IC8 P
SOUND MODE SELECT & CONTROLS IC7 Q
FRONT L/R
REAR L/R
POWER LINK
SWITCH IC2 Q
I²C2
DOLBY CENTER
DOLBY SURROUND
SURROUND L/R
TV PCB14
5VSB
8VSB
ML TRANSMIT
ML RECEIVE
CONFIG
VTR MODULE
STAND POSITION
TURN -R/OFF
TURN -L/OFF
14V
MOTORIZED STAND
SIGNAL PATH
SOUND
VIDEO
DIAGRAM NO

Oscilloscope pictures for diagram F

㉜


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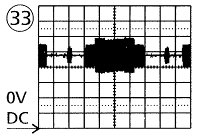

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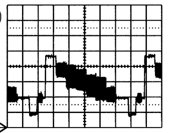

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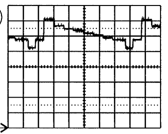

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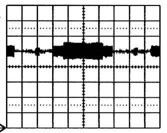

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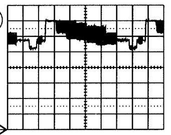

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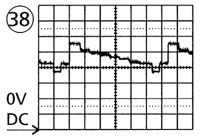
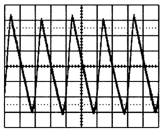


Oscilloscope pictures for diagram M

㊿


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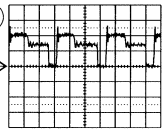

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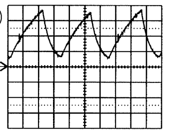

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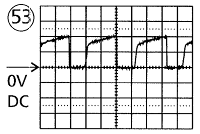

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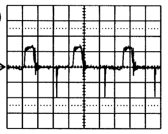

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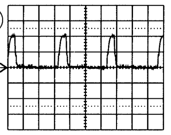

Oscilloscope pictures for diagram N

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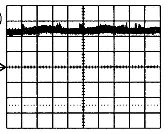

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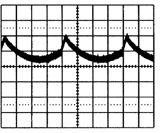

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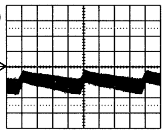

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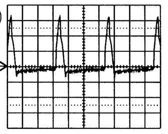

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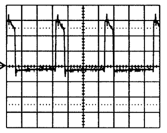

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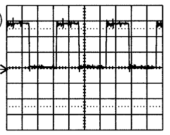

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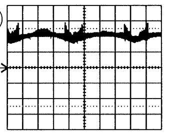

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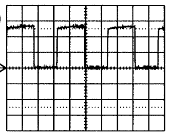

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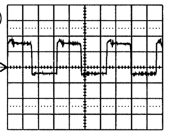

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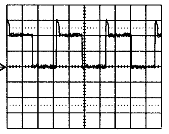

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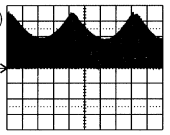

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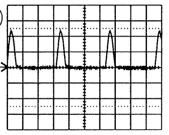

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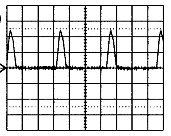

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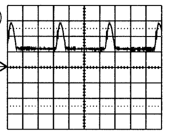

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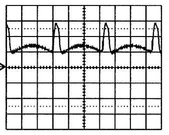

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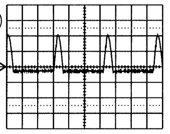

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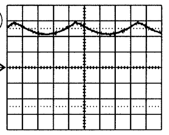

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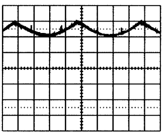

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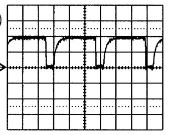

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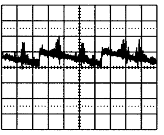

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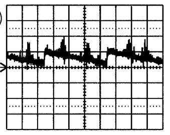

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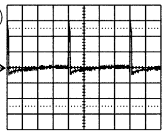

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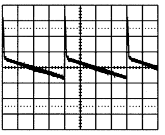

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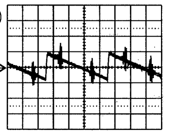
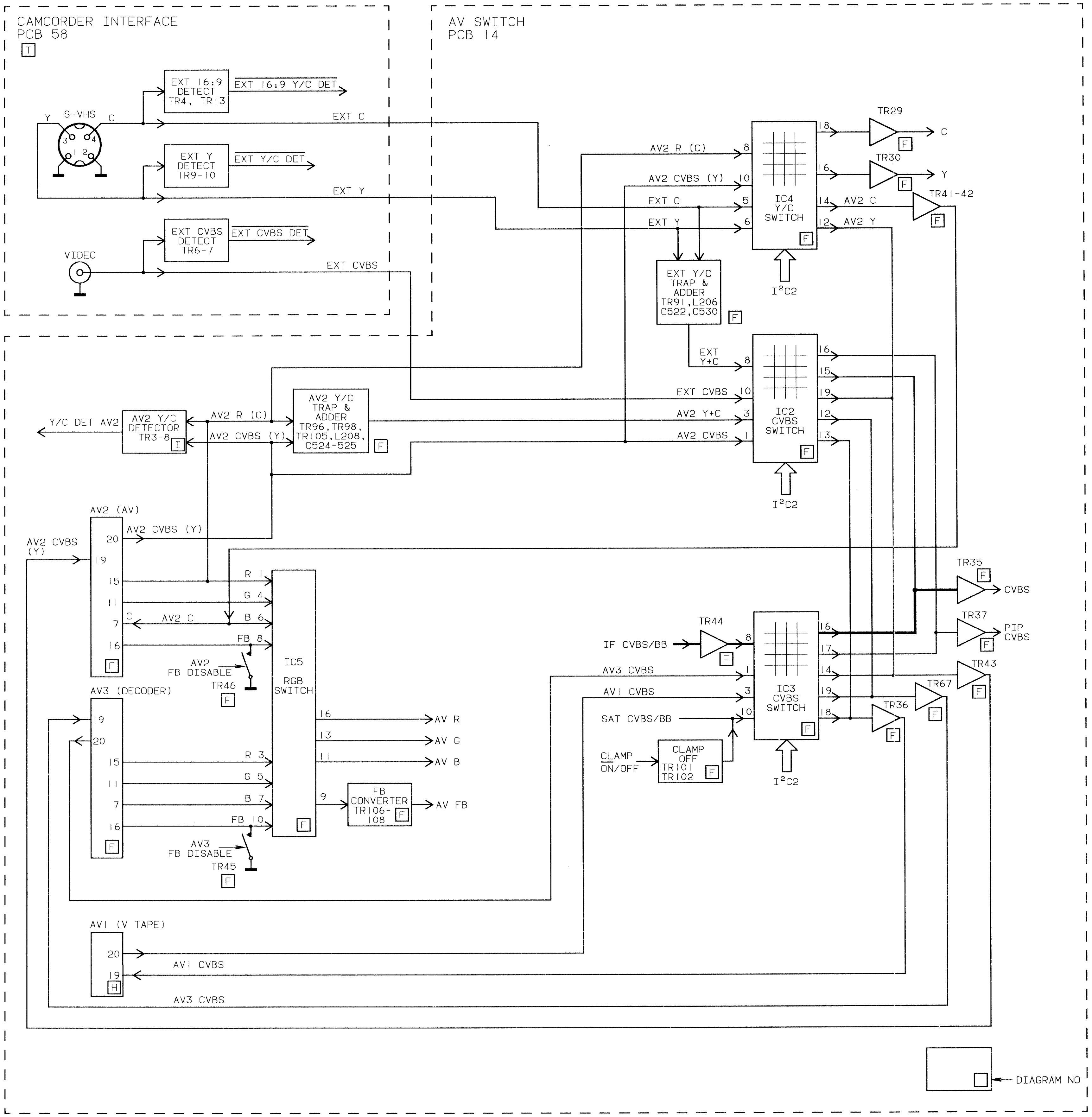
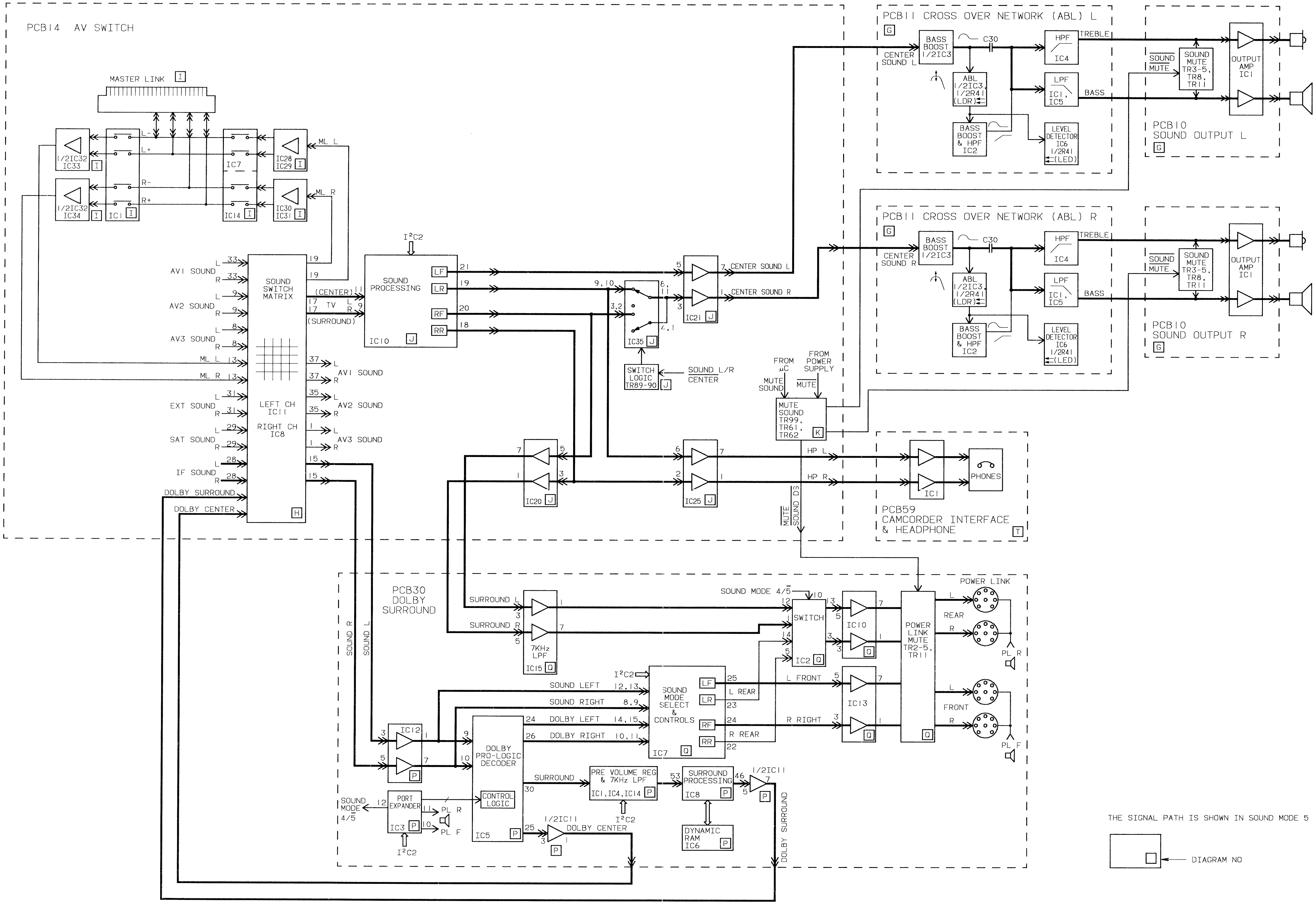


BLOCK DIAGRAM VIDEO SWITCHING

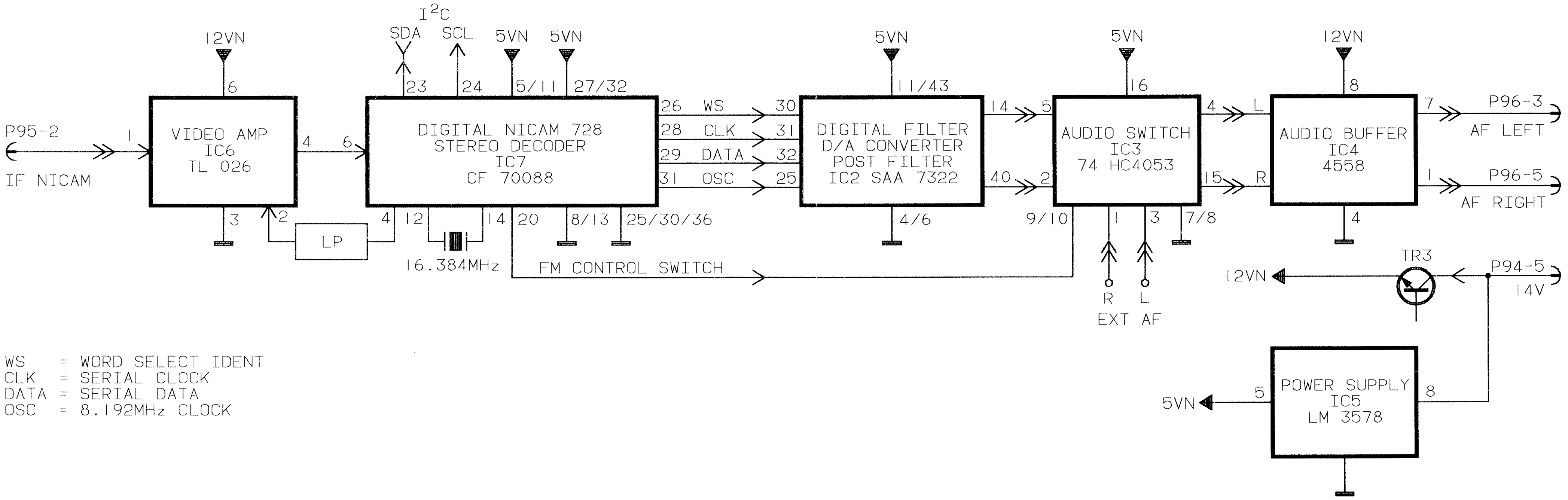

CAMCORDER INTERFACE
PCB 58
T
AV SWITCH
PCB 14
S-VHS
Y
C
EXT 16:9 DETECT TR4, TR13
EXT 16:9 Y/C DET
EXT C
EXT Y DETECT TR9-10
EXT Y/C DET
EXT Y
EXT CVBS DETECT TR6-7
EXT CVBS DET
VIDEO
EXT CVBS
AV2 R (C)
AV2 CVBS (Y)
EXT C
EXT Y
IC4 Y/C SWITCH
F
I²C2
TR29
C
TR30
Y
AV2 C
AV2 Y
TR41-42
EXT Y/C TRAP & ADDER TR91, L206 C522, C530
EXT Y+C
EXT CVBS
AV2 Y+C
AV2 CVBS
IC2 CVBS SWITCH
Y/C DET AV2
AV2 Y/C DETECTOR TR3-8
I
AV2 Y/C TRAP & ADDER TR96, TR98, TR105, L208, C524-525
AV2 (AV)
AV2 CVBS (Y)
AV2 C
R 1
G 4
B 6
FB 8
AV2 FB DISABLE
TR46
IC5 RGB SWITCH
AV3 (DECODER)
R 3
G 5
B 7
FB 10
AV3 FB DISABLE
TR45
AV R
AV G
AV B
FB CONVERTER TR106-108
AV FB
TR35
CVBS
TR37
PIP CVBS
TR43
TR44
IF CVBS/BB
AV3 CVBS
AV1 CVBS
SAT CVBS/BB
IC3 CVBS SWITCH
TR67
TR36
CLAMP ON/OFF
CLAMP OFF TR101 TR102
AV1 (V TAPE)
AV1 CVBS
AV3 CVBS
H
DIAGRAM NO

BLOCK DIAGRAM SOUND


PCB14 AV SWITCH
MASTER LINK I
1/2IC32 IC33 I
1/2IC32 IC34 I
IC1 I
L-
L+
R-
R+
IC7
IC14 I
IC28 IC29 I
IC30 IC31 I
ML L
ML R
AV1 SOUND
AV2 SOUND
AV3 SOUND
EXT SOUND
SAT SOUND
IF SOUND
DOLBY SURROUND
DOLBY CENTER
SOUND SWITCH MATRIX
LEFT CH IC11
RIGHT CH IC8
H
(CENTER)
TV
(SURROUND)
I²C2
SOUND PROCESSING
IC10 J
LF
LR
RF
RR
IC35 J
SWITCH LOGIC TR89-90 J
SOUND L/R CENTER
IC21 J
CENTER SOUND L
CENTER SOUND R
IC20 J
IC25 J
HP L
HP R
FROM µC
MUTE SOUND
FROM POWER SUPPLY
MUTE
MUTE SOUND TR99, TR61, TR62 K
MUTE
SOUND DS
PCB11 CROSS OVER NETWORK (ABL) L
PCB11 CROSS OVER NETWORK (ABL) R
G
CENTER SOUND L
CENTER SOUND R
BASS BOOST 1/2IC3
C30
HPF IC4
TREBLE
ABL 1/2IC3, 1/2R41 (LDR)
LPF IC1, IC5
BASS
BASS BOOST & HPF IC2
LEVEL DETECTOR IC6 1/2R41 (LED)
SOUND MUTE
SOUND MUTE TR3-5, TR8, TR11
OUTPUT AMP IC1
PCB10 SOUND OUTPUT L
PCB10 SOUND OUTPUT R
PCB59 CAMCORDER INTERFACE & HEADPHONE T
IC1
PHONES
PCB30 DOLBY SURROUND
SOUND R
SOUND L
SURROUND L
SURROUND R
7KHz LPF
IC15 Q
SOUND MODE 4/5
SWITCH
IC2 Q
IC10 Q
IC13 Q
POWER LINK MUTE TR2-5, TR11
Q
POWER LINK
REAR
FRONT
PL R
PL F
I²C2
SOUND LEFT
SOUND RIGHT
DOLBY LEFT
DOLBY RIGHT
SOUND MODE SELECT & CONTROLS
IC7 Q
L REAR
R REAR
L FRONT
R RIGHT
IC12 P
DOLBY PRO-LOGIC DECODER
CONTROL LOGIC
IC5 P
SOUND MODE 4/5
PORT EXPANDER
IC3 P
PL R
PL F
SURROUND
PRE VOLUME REG & 7KHz LPF
IC1, IC4, IC14 P
SURROUND PROCESSING
IC8 P
DYNAMIC RAM IC6 P
1/2IC11
DOLBY CENTER
DOLBY SURROUND
DIAGRAM NO

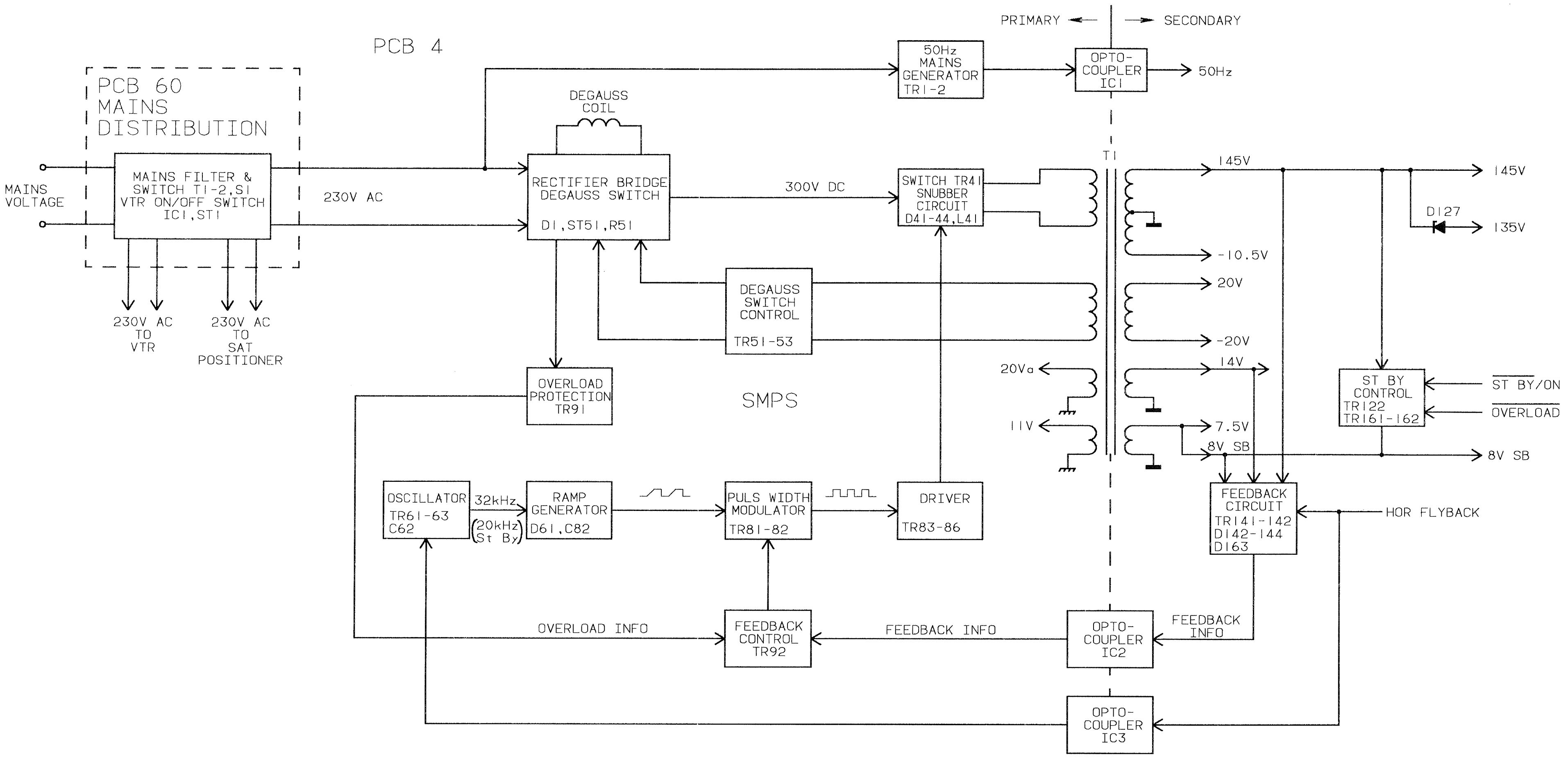
THE SIGNAL PATH IS SHOWN IN SOUND MODE 5

BLOCK DIAGRAM NICAM

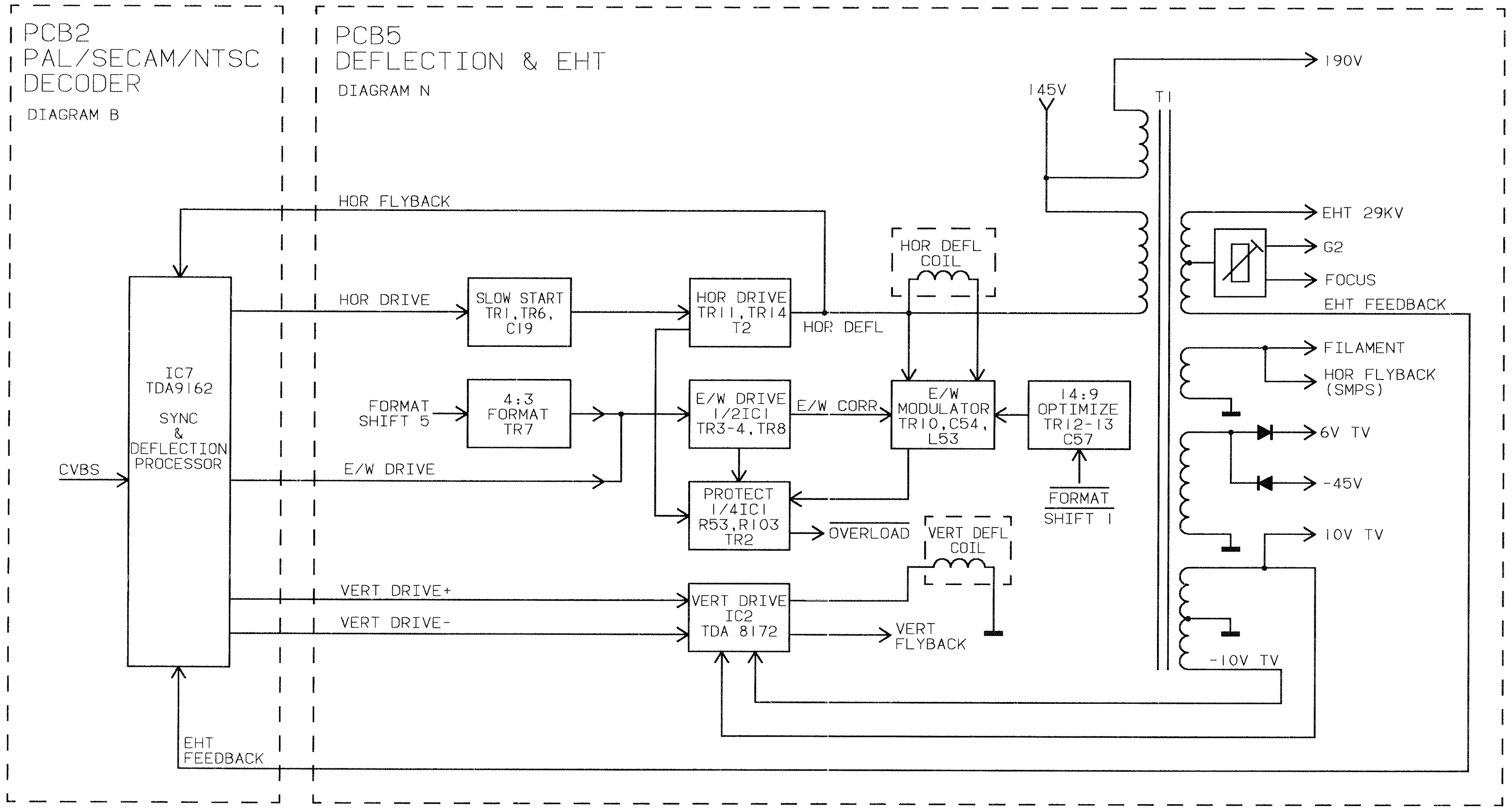

P95-2
IF NICAM
12VN
VIDEO AMP
IC6
TL 026
LP
I²C
SDA
SCL
5VN
5VN
DIGITAL NICAM 728
STEREO DECODER
IC7
CF 70088
16.384MHz
FM CONTROL SWITCH
WS
CLK
DATA
OSC
5VN
DIGITAL FILTER
D/A CONVERTER
POST FILTER
IC2 SAA 7322
5VN
AUDIO SWITCH
IC3
74 HC4053
R L
EXT AF
12VN
AUDIO BUFFER
IC4
4558
P96-3
AF LEFT
P96-5
AF RIGHT
TR3
12VN
P94-5
14V
5VN
POWER SUPPLY
IC5
LM 3578

WS = WORD SELECT IDENT
CLK = SERIAL CLOCK
DATA = SERIAL DATA
OSC = 8.192MHz CLOCK

BLOCK DIAGRAM POWER SUPPLY


PRIMARY
SECONDARY
PCB 4
PCB 60
MAINS
DISTRIBUTION
MAINS
VOLTAGE
MAINS FILTER &
SWITCH T1-2,S1
VTR ON/OFF SWITCH
IC1,ST1
230V AC
230V AC
TO
VTR
230V AC
TO
SAT
POSITIONER
DEGAUSS
COIL
RECTIFIER BRIDGE
DEGAUSS SWITCH
D1,ST51,R51
50Hz
MAINS
GENERATOR
TR1-2
OPTO-
COUPLER
IC1
50Hz
300V DC
SWITCH TR41
SNUBBER
CIRCUIT
D41-44,L41
T1
145V
145V
D127
135V
-10.5V
20V
-20V
14V
20Va
11V
7.5V
8V SB
8V SB
DEGAUSS
SWITCH
CONTROL
TR51-53
OVERLOAD
PROTECTION
TR91
SMPS
ST BY
CONTROL
TR122
TR161-162
ST BY/ON
OVERLOAD
OSCILLATOR
TR61-63
C62
32kHz
(20kHz
St By)
RAMP
GENERATOR
D61,C82
PULS WIDTH
MODULATOR
TR81-82
DRIVER
TR83-86
FEEDBACK
CIRCUIT
TR141-142
D142-144
D163
HOR FLYBACK
OVERLOAD INFO
FEEDBACK
CONTROL
TR92
FEEDBACK INFO
OPTO-
COUPLER
IC2
FEEDBACK
INFO
OPTO-
COUPLER
IC3

BLOCK DIAGRAM DEFLECTION


PCB2
PAL/SECAM/NTSC
DECODER
DIAGRAM B
PCB5
DEFLECTION & EHT
DIAGRAM N
145V
T1
190V
HOR FLYBACK
IC7
TDA9162
SYNC
&
DEFLECTION
PROCESSOR
CVBS
HOR DRIVE
SLOW START
TR1,TR6,
C19
HOR DRIVE
TR11,TR14
T2
HOR DEFL
HOR DEFL
COIL
EHT 29KV
G2
FOCUS
EHT FEEDBACK
FORMAT
SHIFT 5
4:3
FORMAT
TR7
E/W DRIVE
1/2IC1
TR3-4,TR8
E/W CORR
E/W
MODULATOR
TR10,C54,
L53
14:9
OPTIMIZE
TR12-13
C57
FORMAT
SHIFT 1
FILAMENT
HOR FLYBACK
(SMPS)
6V TV
-45V
E/W DRIVE
PROTECT
1/4IC1
R53,R103
TR2
OVERLOAD
VERT DEFL
COIL
10V TV
VERT DRIVE+
VERT DRIVE-
VERT DRIVE
IC2
TDA 8172
VERT
FLYBACK
-10V TV
EHT
FEEDBACK

BLOCK DIAGRAM PAL/SECAM/NTSC DECODER

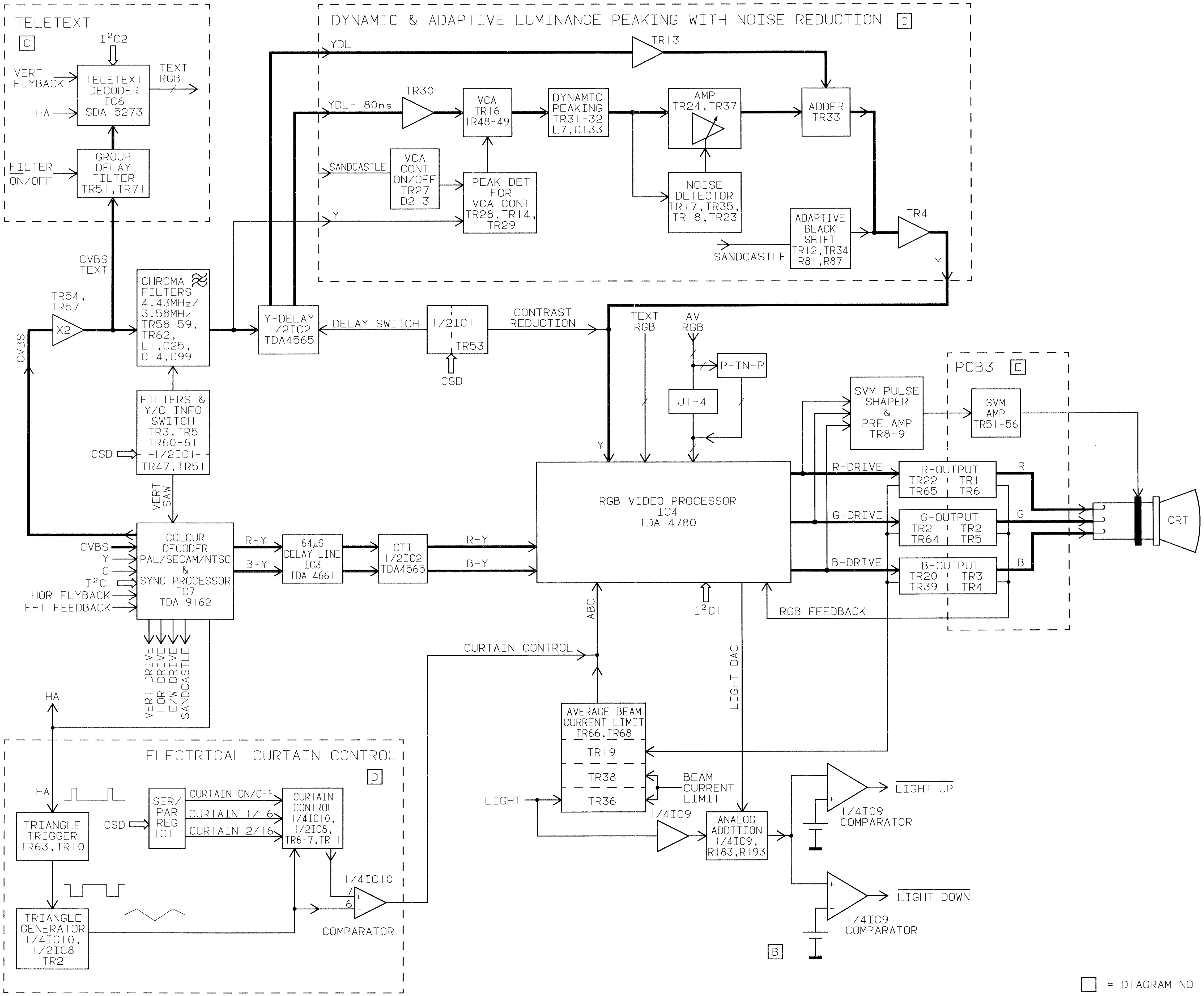

TELETEXT
C
I²C2
VERT FLYBACK
HA
TELETEXT DECODER IC6 SDA 5273
TEXT RGB
FILTER ON/OFF
GROUP DELAY FILTER TR51, TR71
DYNAMIC & ADAPTIVE LUMINANCE PEAKING WITH NOISE REDUCTION
C
YDL
TR13
YDL-180ns
TR30
VCA TR16 TR48-49
DYNAMIC PEAKING TR31-32 L7, C133
AMP TR24, TR37
ADDER TR33
SANDCASTLE
VCA CONT ON/OFF TR27 D2-3
PEAK DET FOR VCA CONT TR28, TR14, TR29
NOISE DETECTOR TR17, TR35, TR18, TR23
ADAPTIVE BLACK SHIFT TR12, TR34 R81, R87
TR4
SANDCASTLE
Y
Y
CVBS TEXT
TR54, TR57
X2
CVBS
CHROMA FILTERS 4.43MHz/ 3.58MHz TR58-59, TR62, L1, C25, C14, C99
Y-DELAY 1/2IC2 TDA4565
DELAY SWITCH
1/2IC1 TR53
CSD
CONTRAST REDUCTION
TEXT RGB
AV RGB
P-IN-P
J1-4
PCB3
E
SVM PULSE SHAPER & PRE AMP TR8-9
SVM AMP TR51-56
FILTERS & Y/C INFO SWITCH TR3, TR5 TR60-61 -1/2IC1- TR47, TR51
CSD
VERT SAW
Y
RGB VIDEO PROCESSOR IC4 TDA 4780
R-DRIVE
G-DRIVE
B-DRIVE
R-OUTPUT TR22 TR1 TR65 TR6
G-OUTPUT TR21 TR2 TR64 TR5
B-OUTPUT TR20 TR3 TR39 TR4
R
G
B
CRT
CVBS
Y
C
I²C1
HOR FLYBACK
EHT FEEDBACK
COLOUR DECODER PAL/SECAM/NTSC & SYNC PROCESSOR IC7 TDA 9162
R-Y
B-Y
64µS DELAY LINE IC3 TDA 4661
CTI 1/2IC2 TDA4565
R-Y
B-Y
ABC
I²C1
RGB FEEDBACK
VERT DRIVE
HOR DRIVE
E/W DRIVE
SANDCASTLE
CURTAIN CONTROL
LIGHT DAC
HA
AVERAGE BEAM CURRENT LIMIT TR66, TR68
TR19
TR38
TR36
BEAM CURRENT LIMIT
LIGHT
1/4IC9
ANALOG ADDITION 1/4IC9, R183, R193
LIGHT UP
1/4IC9 COMPARATOR
LIGHT DOWN
1/4IC9 COMPARATOR
B
ELECTRICAL CURTAIN CONTROL
D
HA
TRIANGLE TRIGGER TR63, TR10
CSD
SER/ PAR REG IC11
CURTAIN ON/OFF
CURTAIN 1/16
CURTAIN 2/16
CURTAIN CONTROL 1/4IC10, 1/2IC8, TR6-7, TR11
1/4IC10
7
6
1
COMPARATOR
TRIANGLE GENERATOR 1/4IC10, 1/2IC8 TR2
□ = DIAGRAM NO

DIAGRAM A TUNER & IF SYSTEM B/G/M/I/D/K

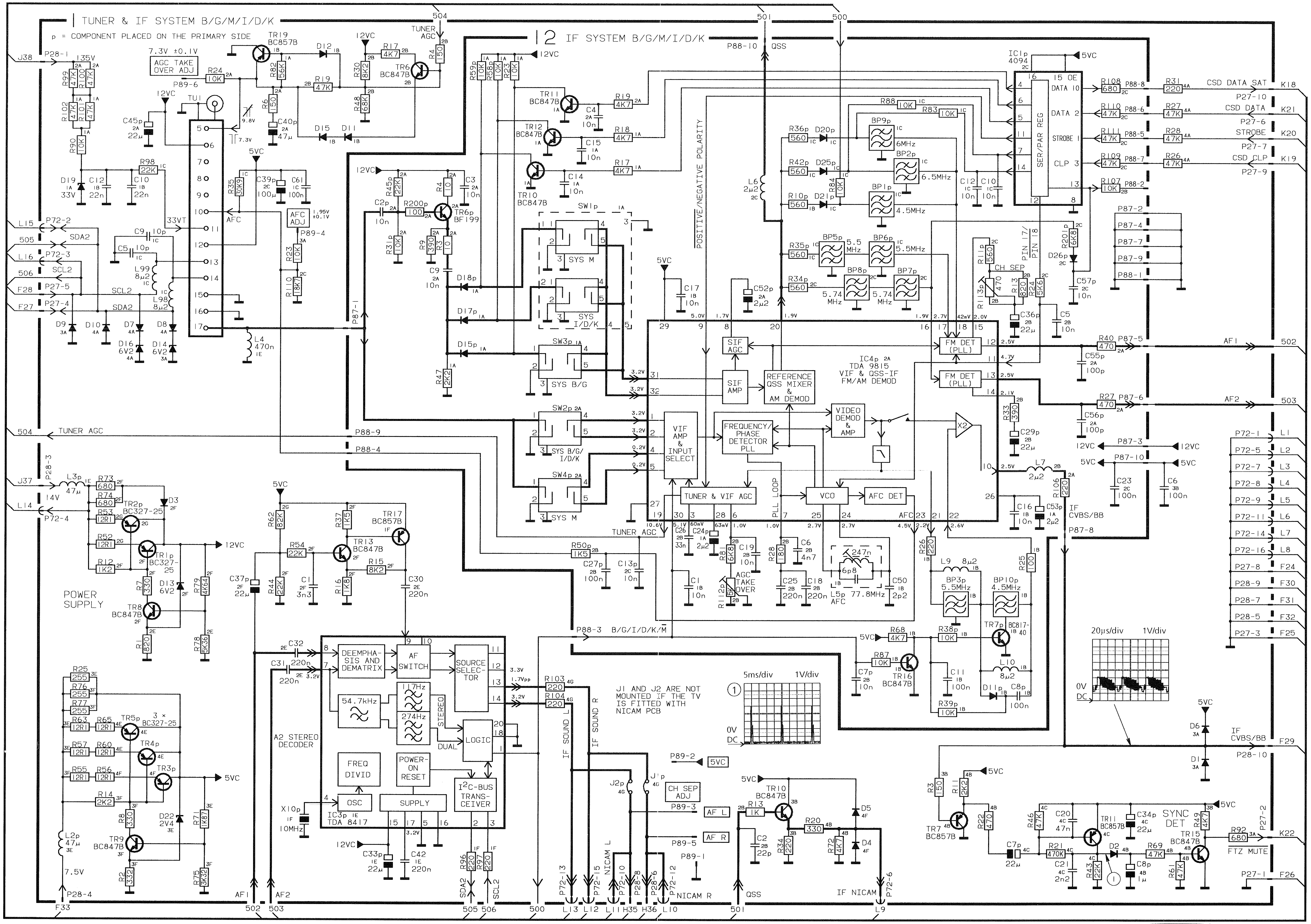
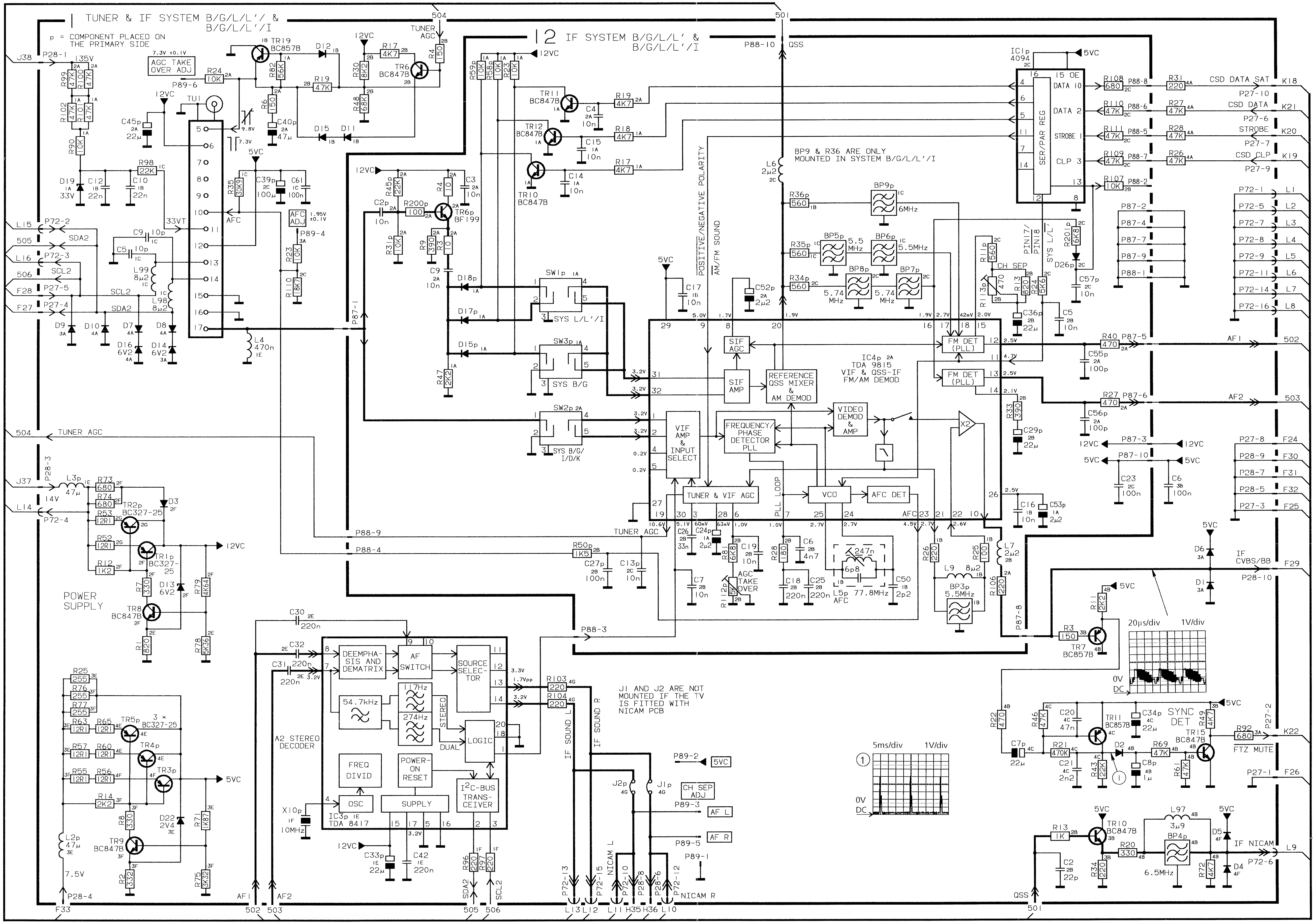

TUNER & IF SYSTEM B/G/M/I/D/K
p = COMPONENT PLACED ON THE PRIMARY SIDE
I2 IF SYSTEM B/G/M/I/D/K
AGC TAKE OVER ADJ
7.3V ±0.1V
TU1
AFC ADJ
TUNER AGC
POSITIVE/NEGATIVE POLARITY
IC4p TDA 9815 VIF & QSS-IF FM/AM DEMOD
SIF AGC
SIF AMP
REFERENCE QSS MIXER & AM DEMOD
VIF AMP & INPUT SELECT
FREQUENCY/ PHASE DETECTOR PLL
VIDEO DEMOD & AMP
TUNER & VIF AGC
PLL LOOP
VCO
AFC DET
FM DET (PLL)
X2
IC1p 4094
SER/PAR REG
15 OE
DATA 10
DATA 2
STROBE 11
CLP 3
CSD DATA SAT
CSD DATA
STROBE
CSD CLP
CH SEP
PIN 17/ PIN 18
SW1p SYS M
SYS I/D/K
SW3p SYS B/G
SW2p SYS B/G/ I/D/K
SW4p SYS M
6MHz
6.5MHz
4.5MHz
5.5 MHz
5.5MHz
5.74 MHz
AGC TAKE OVER
77.8MHz
AFC
IF CVBS/BB
POWER SUPPLY
A2 STEREO DECODER
IC3p TDA 8417
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
SUPPLY
I²C-BUS TRANSCEIVER
X10p 10MHz
J1 AND J2 ARE NOT MOUNTED IF THE TV IS FITTED WITH NICAM PCB
①
5ms/div
1V/div
0V DC
20μs/div
1V/div
IF SOUND L
IF SOUND R
NICAM L
NICAM R
IF NICAM
QSS
CH SEP ADJ
AF L
AF R
SYNC DET
FTZ MUTE
P88-3 B/G/I/D/K/M
3 × BC327-25
504
501
500
502
503
505
506
J38
J37
L14
L15
L16
F28
F27
F33
K18
K21
K20
K19
K22
F26
F29
L1
L2
L3
L4
L5
L6
L7
L8
F24
F30
F31
F32
F25
L13
L12
L11
H35
H36
L10
L9
AF1
AF2
SDA2
SCL2
12VC
5VC
33VT

DIAGRAM A TUNER & SYSTEM B/G/L/L' & SYSTEM B/G/L/L'/I

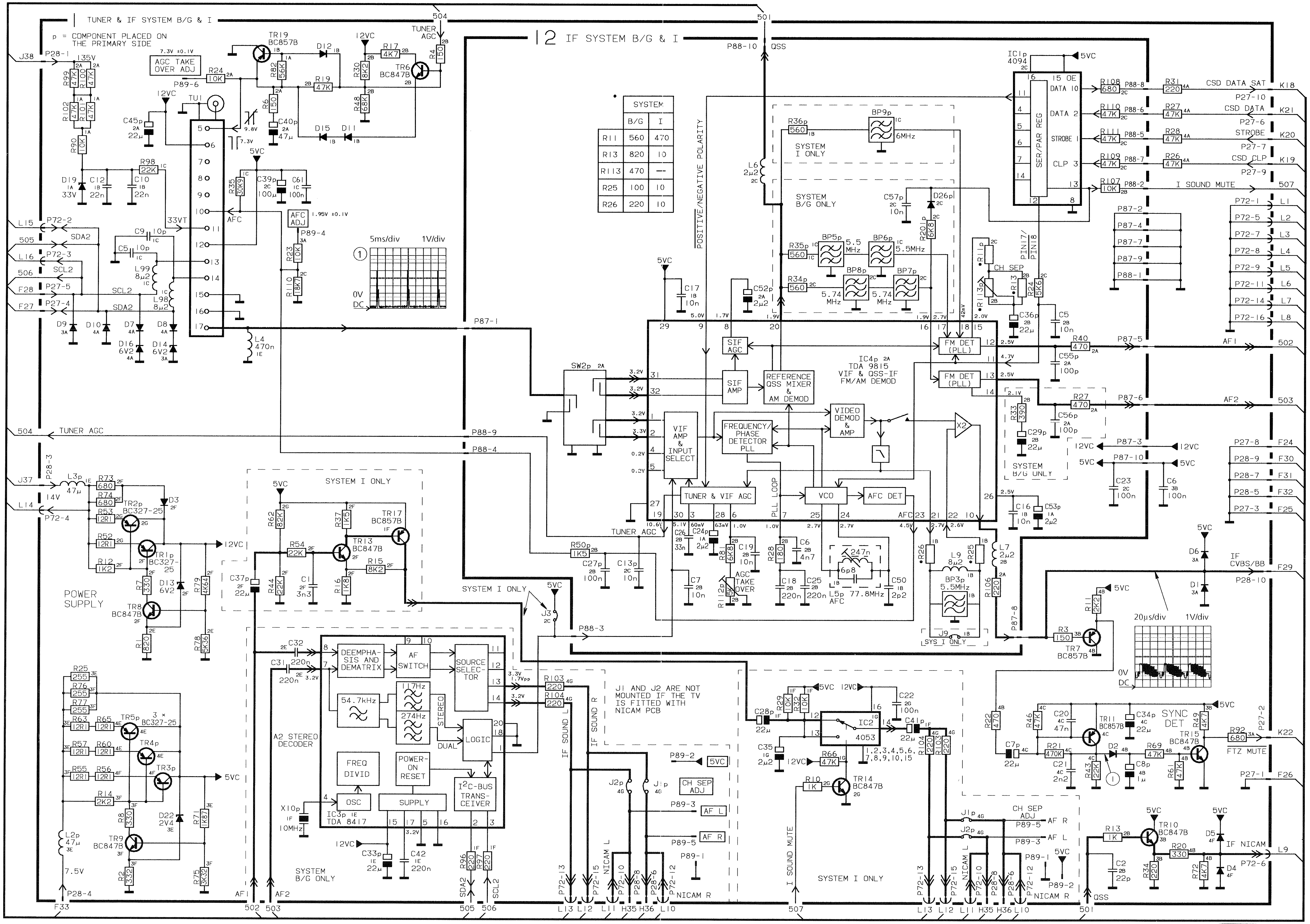

p = COMPONENT PLACED ON THE PRIMARY SIDE

BP9 & R36 ARE ONLY MOUNTED IN SYSTEM B/G/L/L'/I

J1 AND J2 ARE NOT MOUNTED IF THE TV IS FITTED WITH NICAM PCB

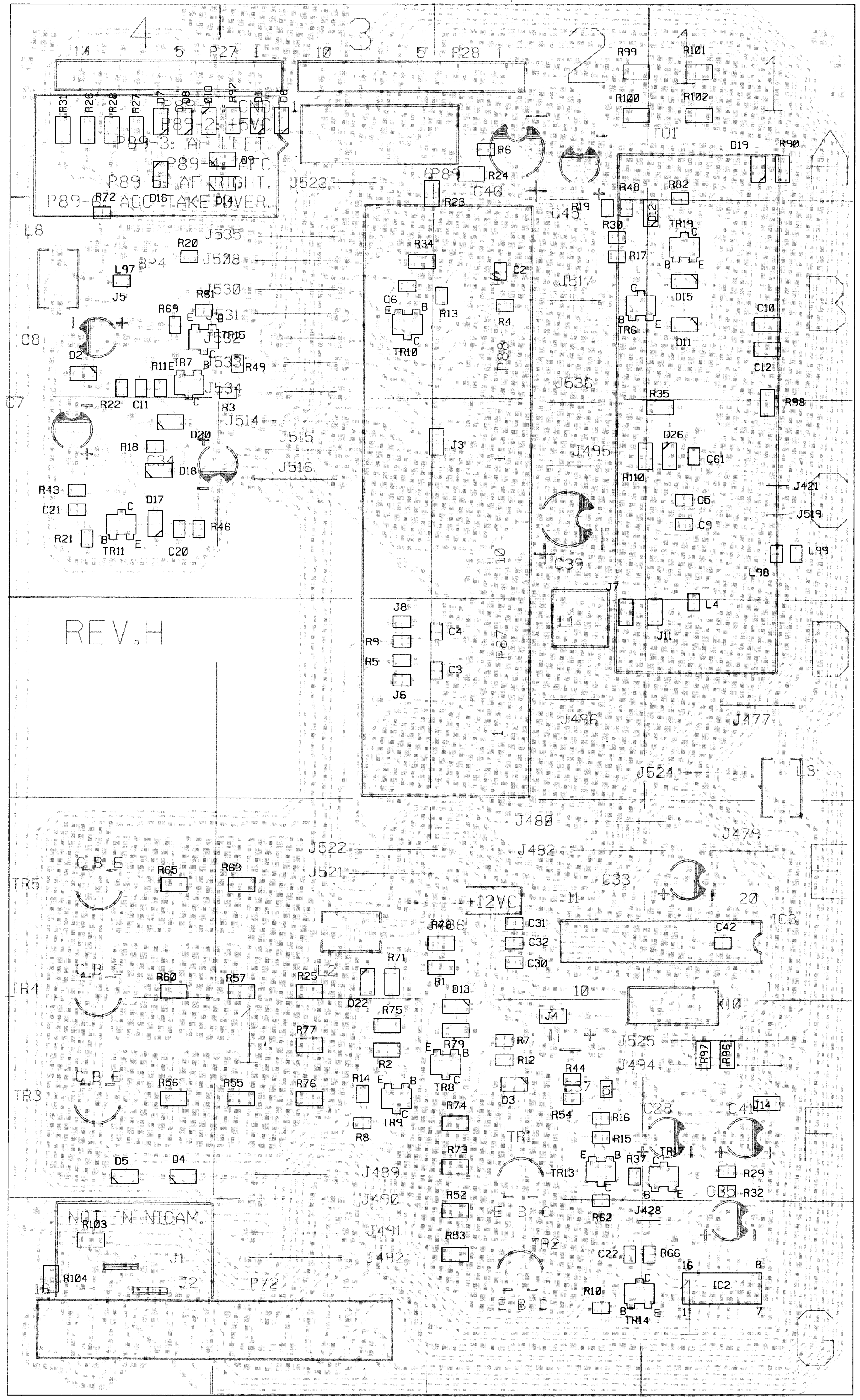
1 TUNER & IF SYSTEM B/G/L/L'/ & B/G/L/L'/I
12 IF SYSTEM B/G/L/L' & B/G/L/L'/I
AGC TAKE OVER ADJ
AFC ADJ
TU1
TUNER AGC
POWER SUPPLY
IC1p 4094
SER/PAR REG
DATA
STROBE
CLP
CSD DATA SAT
CSD DATA
STROBE
CSD CLP
IC4p TDA 9815 VIF & QSS-IF FM/AM DEMOD
SIF AGC
SIF AMP
REFERENCE QSS MIXER & AM DEMOD
FM DET (PLL)
VIF AMP & INPUT SELECT
FREQUENCY/ PHASE DETECTOR PLL
VIDEO DEMOD & AMP
TUNER & VIF AGC
VCO
AFC DET
PLL LOOP
POSITIVE/NEGATIVE POLARITY
AM/FM SOUND
SW1p SYS L/L'/I
SW3p SYS B/G
SW2p SYS B/G/ I/D/K
CH SEP
SYS L/L'
PIN17/ PIN18
BP9p 6MHz
BP5p 5.5 MHz
BP6p 5.5MHz
BP8p 5.74 MHz
BP7p 5.74 MHz
BP3p 5.5MHz
BP4p 6.5MHz
L5p AFC 77.8MHz
AGC TAKE OVER
IC3p TDA 8417
A2 STEREO DECODER
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
SUPPLY
I²C-BUS TRANSCEIVER
X10p 10MHz
IF SOUND L
IF SOUND R
CH SEP ADJ
AF L
AF R
NICAM L
NICAM R
SYNC DET
FTZ MUTE
IF CVBS/BB
IF NICAM
20µs/div 1V/div
5ms/div 1V/div
0V DC
AF1
AF2
12VC
5VC
5VC
QSS
TR19 BC857B
TR6 BC847B
TR11 BC847B
TR12 BC847B
TR10 BC847B
TR6p BF199
TR2p BC327-25
TR1p BC327-25
TR8 BC847B
TR5p 3 × BC327-25
TR4p
TR3p
TR9 BC847B
TR7 BC857B
TR11 BC857B
TR15 BC847B
TR10 BC847B
J38 J37 L15 505 L16 506 F28 F27 504 L14
P28-1 P72-2 SDA2 P72-3 SCL2 P27-5 P27-4 P28-3 P72-4
K18 K21 K20 K19 L1 L2 L3 L4 L5 L6 L7 L8
502 503 F24 F30 F31 F32 F25 F29 K22 F26 L9
F33 502 503 505 506 L13 L12 L11 H35 H36 L10 501
P88-8 P88-6 P88-5 P88-7 P88-2 P27-10 P27-6 P27-7 P27-9
P87-2 P87-4 P87-7 P87-9 P88-1
P72-1 P72-5 P72-7 P72-8 P72-9 P72-11 P72-14 P72-16
P87-5 P87-6 P87-3 P87-10
P27-8 P28-9 P28-7 P28-5 P27-3 P28-10 P27-2 P27-1 P72-6
P88-9 P88-4 P88-3 P88-10 P87-1 P87-8 P89-6 P89-4 P89-2 P89-3 P89-5 P89-1 P28-4
P72-13 P72-15 P72-10 P28-8 P28-6 P72-12

DIAGRAM A TUNER & IF SYSTEM B/G & SYSTEM I

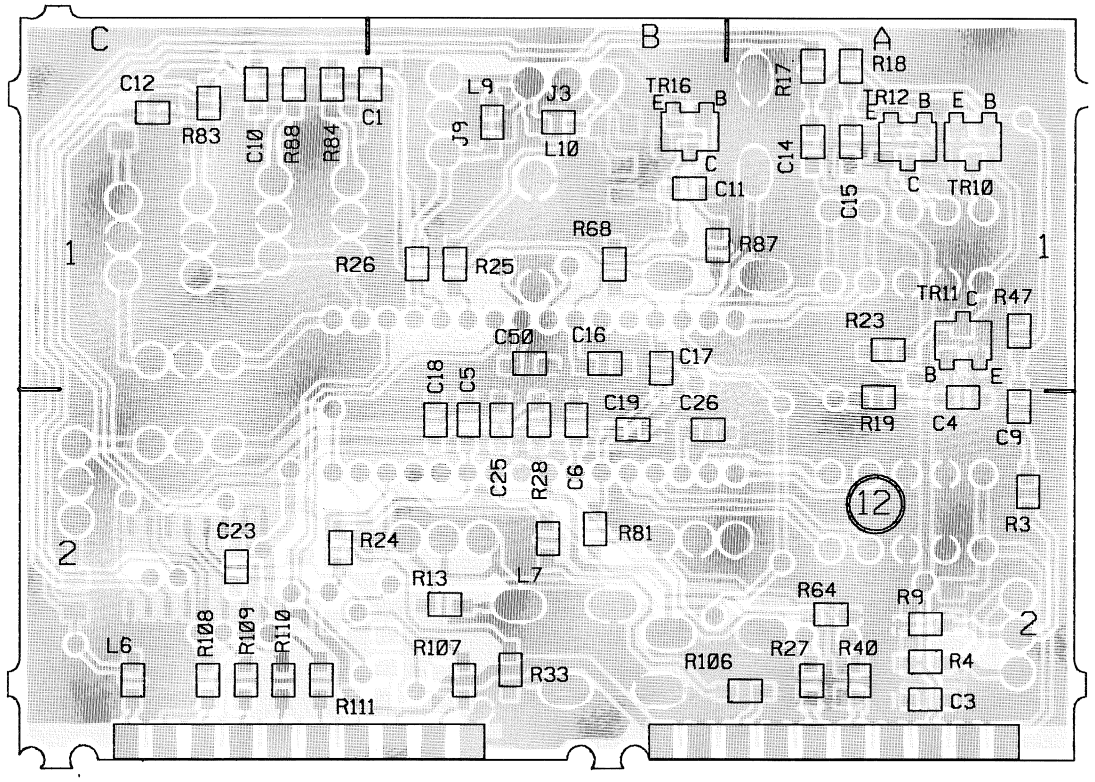

TUNER & IF SYSTEM B/G & I
p = COMPONENT PLACED ON THE PRIMARY SIDE
12 IF SYSTEM B/G & I
AGC TAKE OVER ADJ
TUNER AGC
TU1
AFC ADJ
AFC
33VT
POWER SUPPLY
SYSTEM I ONLY
SYSTEM B/G ONLY
POSITIVE/NEGATIVE POLARITY
IC4p TDA 9815 VIF & QSS-IF FM/AM DEMOD
SIF AGC
SIF AMP
REFERENCE QSS MIXER & AM DEMOD
FM DET (PLL)
VIF AMP & INPUT SELECT
FREQUENCY/PHASE DETECTOR PLL
VIDEO DEMOD & AMP
TUNER & VIF AGC
VCO
AFC DET
PLL LOOP
IC1p 4094
SER/PAR REG
DATA 10
DATA 2
STROBE 1
CLP 3
CSD DATA SAT
CSD DATA
STROBE
CSD CLP
I SOUND MUTE
CH SEP
AF1
AF2
IF CVBS/BB
5ms/div
1V/div
20µs/div
SYNC DET
FTZ MUTE
IF NICAM
A2 STEREO DECODER
IC3p TDA 8417
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
SUPPLY
I²C-BUS TRANSCEIVER
X10p 10MHz
J1 AND J2 ARE NOT MOUNTED IF THE TV IS FITTED WITH NICAM PCB
CH SEP ADJ
AF L
AF R
IC2 4053
IF SOUND L
IF SOUND R
NICAM L
NICAM R
SYS I ONLY
BP3p 5.5MHz
77.8MHz AFC
TR7 BC857B
TR15 BC847B
TR10 BC847B

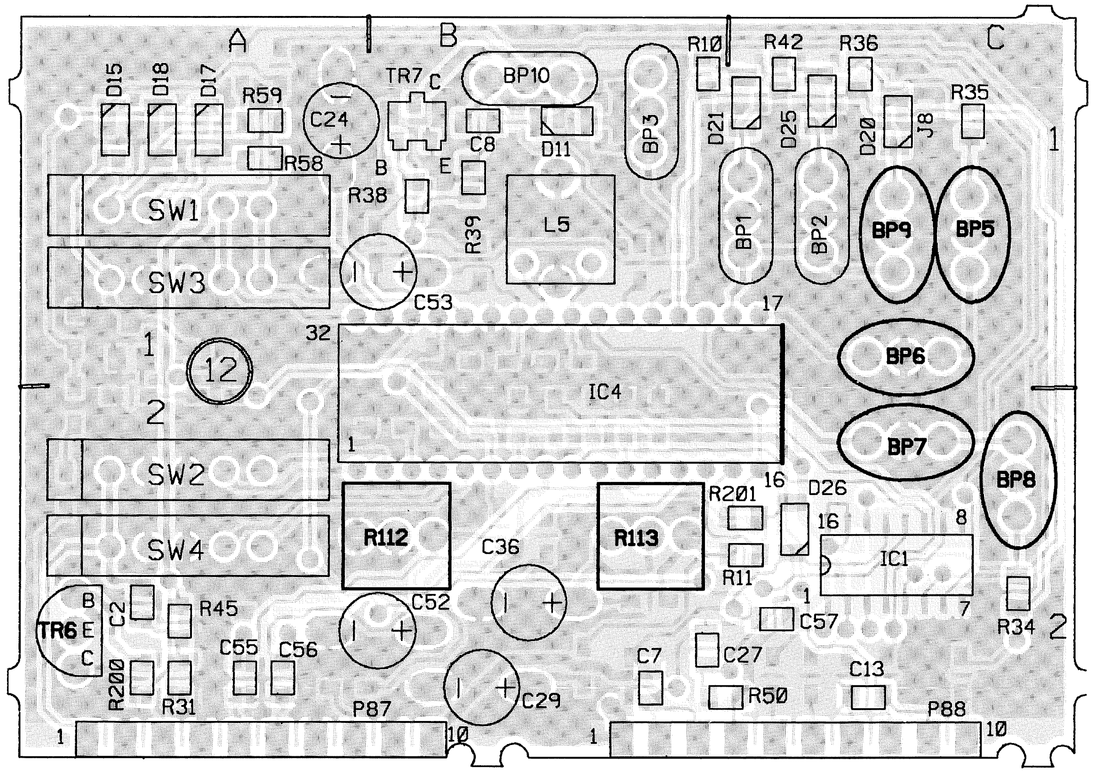
SYSTEM	B/G	I
R11	560	470
R13	820	10
R113	470	--
R25	100	10
R26	220	10

PCB 1

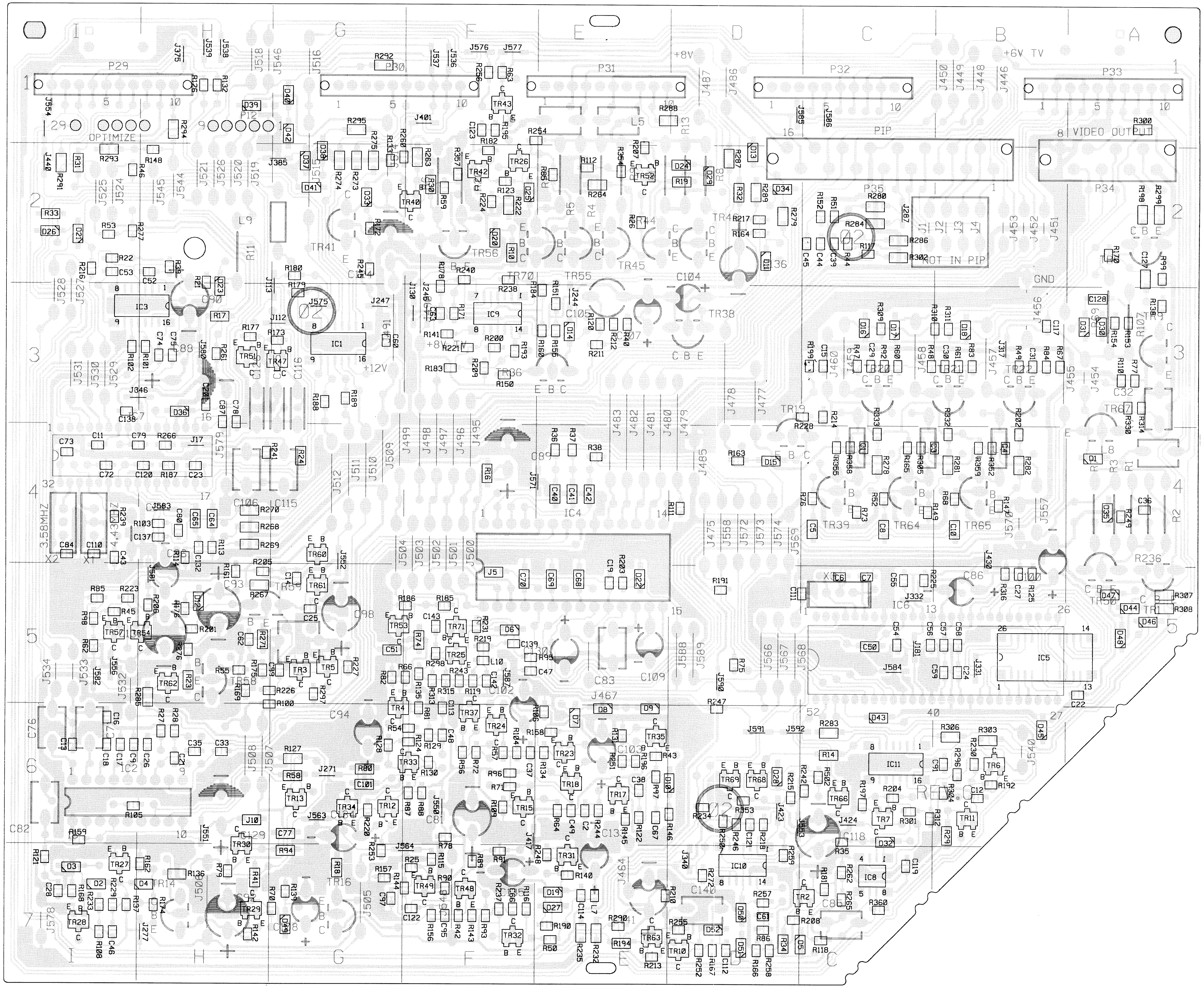

4
3
2
1
A
B
C
D
E
F
G
P27
P28
TU1
P89-1: GND
P89-2: +5VC
P89-3: AF LEFT.
P89-4: AFC
P89-5: AF RIGHT.
P89-6: AGC TAKE OVER.
J523
J535
J508
J530
J531
J532
J533
J534
J514
J515
J516
J517
J536
J495
J496
J477
J524
J480
J482
J479
J522
J521
J525
J494
J489
J490
J491
J492
J428
J421
J519
REV.H
P87
P88
P72
C39
C40
C45
C33
+12VC
IC2
IC3
X10
L1
L3
L8
TR1
TR2
TR3
TR4
TR5
C B E
E B C
NOT IN NICAM.
J1
J2

PCB 12


C
B
A
1
2
12
C12
R83
C10
R88
R84
C1
L9
J3
J9
L10
TR16
R17
R18
TR12
C14
C15
TR10
C11
R68
R87
R26
R25
TR11
R47
R23
C50
C16
C17
C18
C5
C19
C26
R19
C4
C9
C25
R28
C6
R81
R3
C23
R24
R13
L7
R64
R9
L6
R108
R109
R110
R107
R33
R106
R27
R40
R4
C3
R111


A
B
C
1
2
12
D15
D18
D17
R59
C24
TR7
BP10
R10
R42
R36
R35
C8
D11
BP3
D21
D25
D20
J8
R58
R38
SW1
SW3
SW2
SW4
R39
L5
BP1
BP2
BP9
BP5
BP6
BP7
BP8
C53
32
17
IC4
16
R201
D26
R112
R113
C36
R11
IC1
8
7
C52
C57
R34
TR6
C2
R45
C55
C56
C7
C27
C13
R200
R31
C29
R50
P87
P88
10

PCB 2


I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
P29
P30
P31
P32
P33
P34
P35
PIP
VIDEO OUTPUT
OPTIMIZE
NOT IN PIP
GND
+8V
+6V TV
+8V TV
+12V
IC1
IC3
IC4
IC5
IC6
IC8
IC9
IC10
IC11
3.58MHz
4.43MHz
X1
X2

Oscilloscope pictures for diagram B

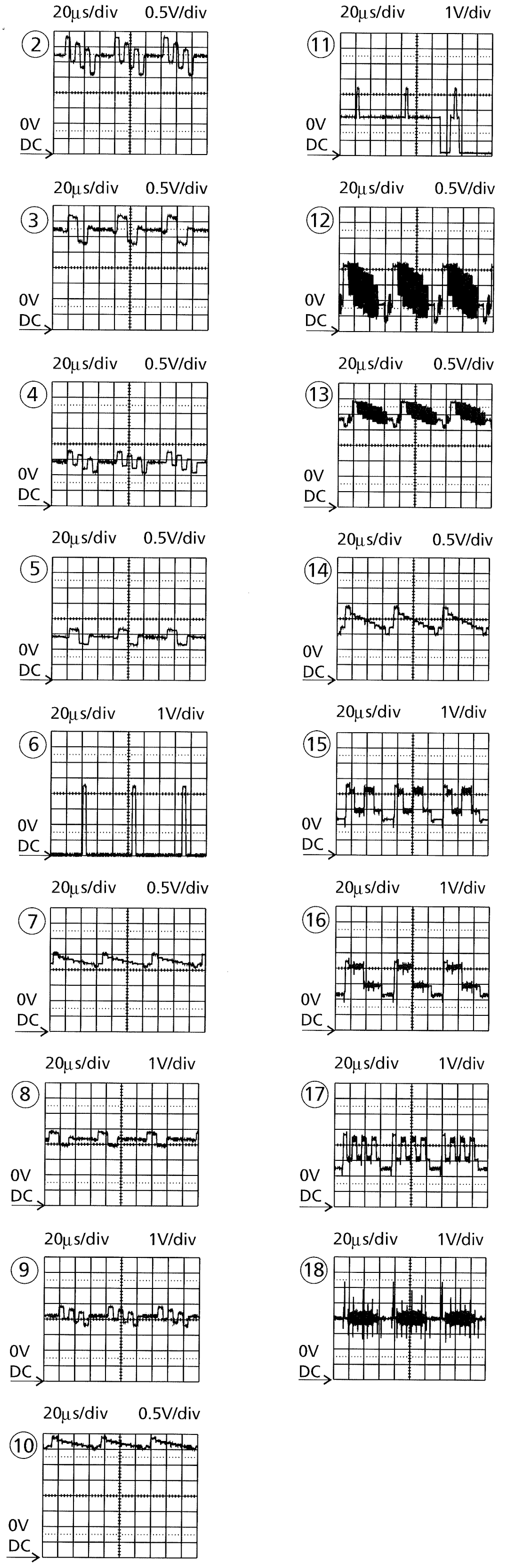


DIAGRAM B PAL/SECAM/NTSC COLOUR DECODER

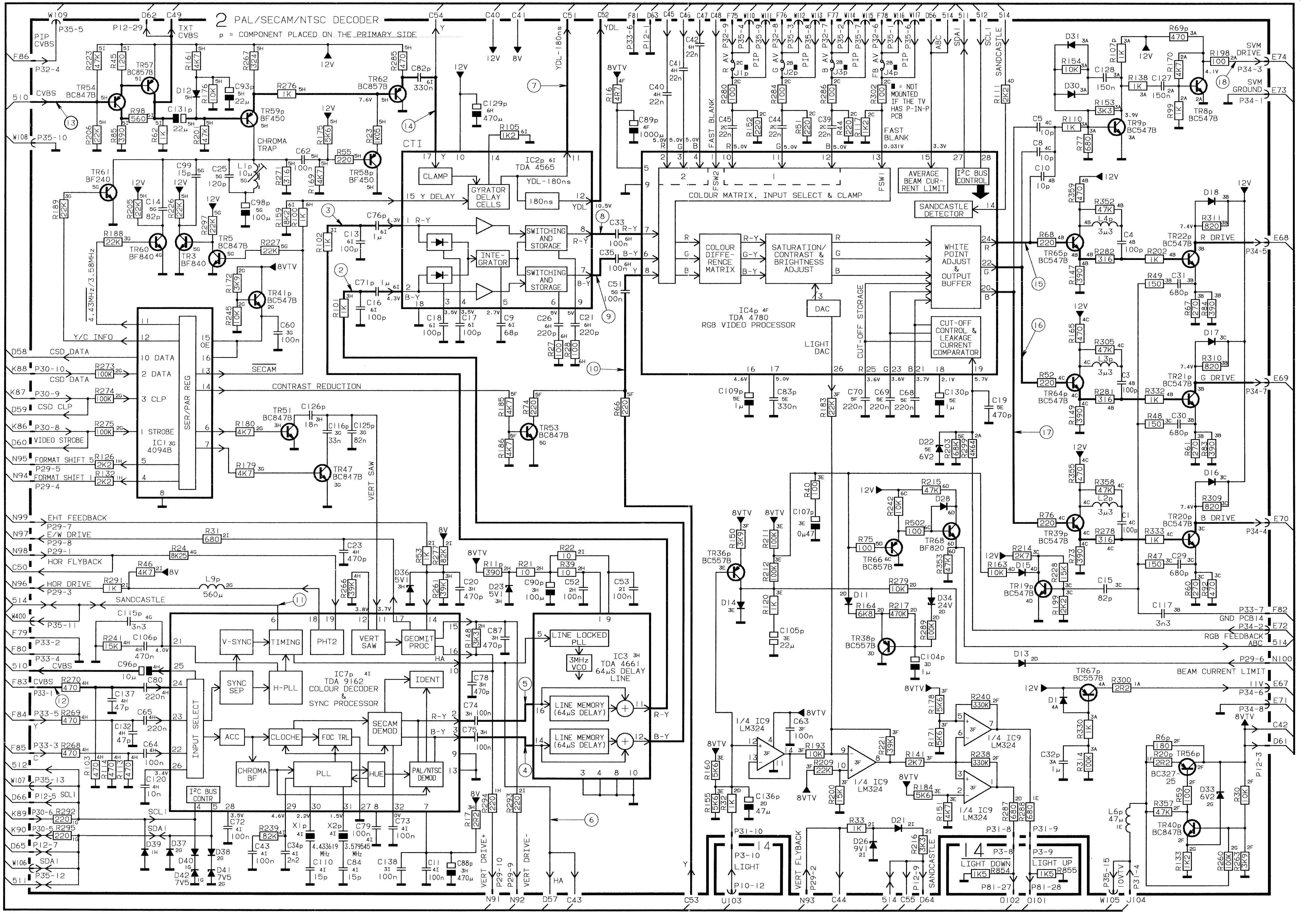

2 PAL/SECAM/NTSC DECODER
p = COMPONENT PLACED ON THE PRIMARY SIDE
PIP CVBS
TXT CVBS
CVBS
CHROMA TRAP
CTI
IC2p TDA 4565
CLAMP
GYRATOR DELAY CELLS
YDL-180ns
180ns
15 Y DELAY
INTE-GRATOR
SWITCHING AND STORAGE
SWITCHING AND STORAGE
4.43MHz/3.58MHz
Y/C INFO
CSD DATA
CSD CLP
VIDEO STROBE
FORMAT SHIFT 5
FORMAT SHIFT 1
IC1 4094B
SER/PAR REG
10 DATA
2 DATA
3 CLP
1 STROBE
SECAM
CONTRAST REDUCTION
VERT SAW
EHT FEEDBACK
E/W DRIVE
HOR FLYBACK
HOR DRIVE
SANDCASTLE
IC7p TDA 9162 COLOUR DECODER & SYNC PROCESSOR
V-SYNC
TIMING
PHT2
VERT SAW
GEOMIT PROC
SYNC SEP
H-PLL
IDENT
INPUT SELECT
ACC
CLOCHE
FOC TRL
SECAM DEMOD
CHROMA BF
PLL
HUE
PAL/NTSC DEMOD
I²C BUS CONTR
SCL1
SDA1
4.433619 MHz
3.579545 MHz
IC3 TDA 4661 64µS DELAY LINE
LINE LOCKED PLL
3MHz VCO
LINE MEMORY (64µS DELAY)
LINE MEMORY (64µS DELAY)
VERT DRIVE+
VERT DRIVE-
HA
YDL
FAST BLANK
R AV
G AV
B AV
FB AV
PIP
■ = NOT MOUNTED IF THE TV HAS P-IN-P PCB
ABC
SANDCASTLE
IC4p TDA 4780 RGB VIDEO PROCESSOR
AVERAGE BEAM CURRENT LIMIT
I²C BUS CONTROL
SANDCASTLE DETECTOR
COLOUR MATRIX, INPUT SELECT & CLAMP
FSW1
FSW2
COLOUR DIFFERENCE MATRIX
SATURATION/CONTRAST & BRIGHTNESS ADJUST
WHITE POINT ADJUST & OUTPUT BUFFER
DAC
LIGHT DAC
CUT-OFF STORAGE
CUT-OFF CONTROL & LEAKAGE CURRENT COMPARATOR
SVM DRIVE
SVM GROUND
R DRIVE
G DRIVE
B DRIVE
GND PCB14
RGB FEEDBACK
ABC
BEAM CURRENT LIMIT
1/4 IC9 LM324
LIGHT
LIGHT DOWN
LIGHT UP
VERT FLYBACK
E74
E73
E68
E69
E70
F82
E72
N100
E67
E71
C42
D61
F86
S10
W108
D58
K88
K87
D59
K86
D60
N95
N94
N99
N97
N98
C50
N96
W400
F79
F80
F83
F84
F85
W107
D66
K89
K90
D65
W106
N91
N92
D57
C43
C53
U103
N93
C44
C55
D64
D102
D101
W105
J104

DIAGRAM C TELETEXT & LUMINANCE PEAKING

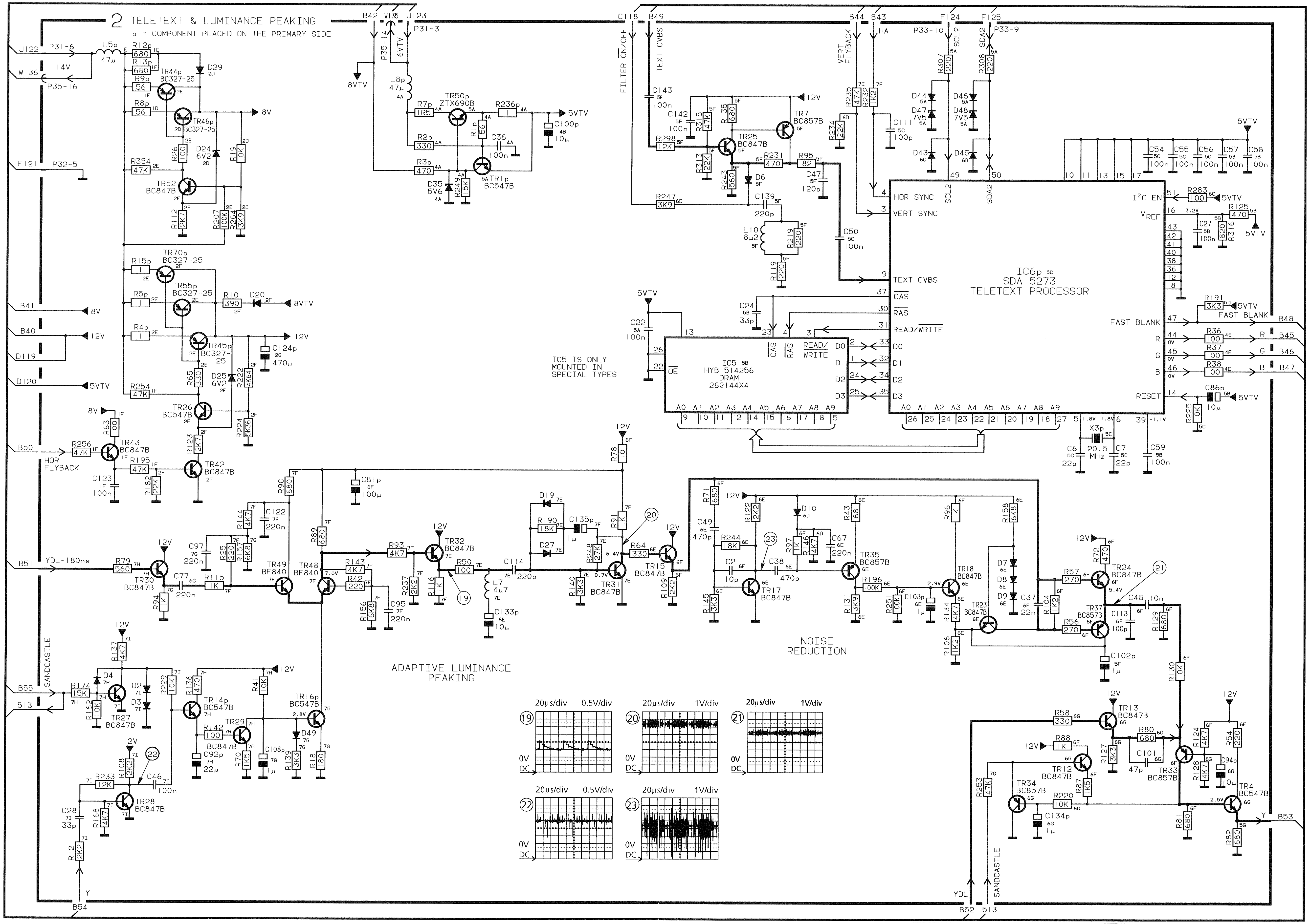
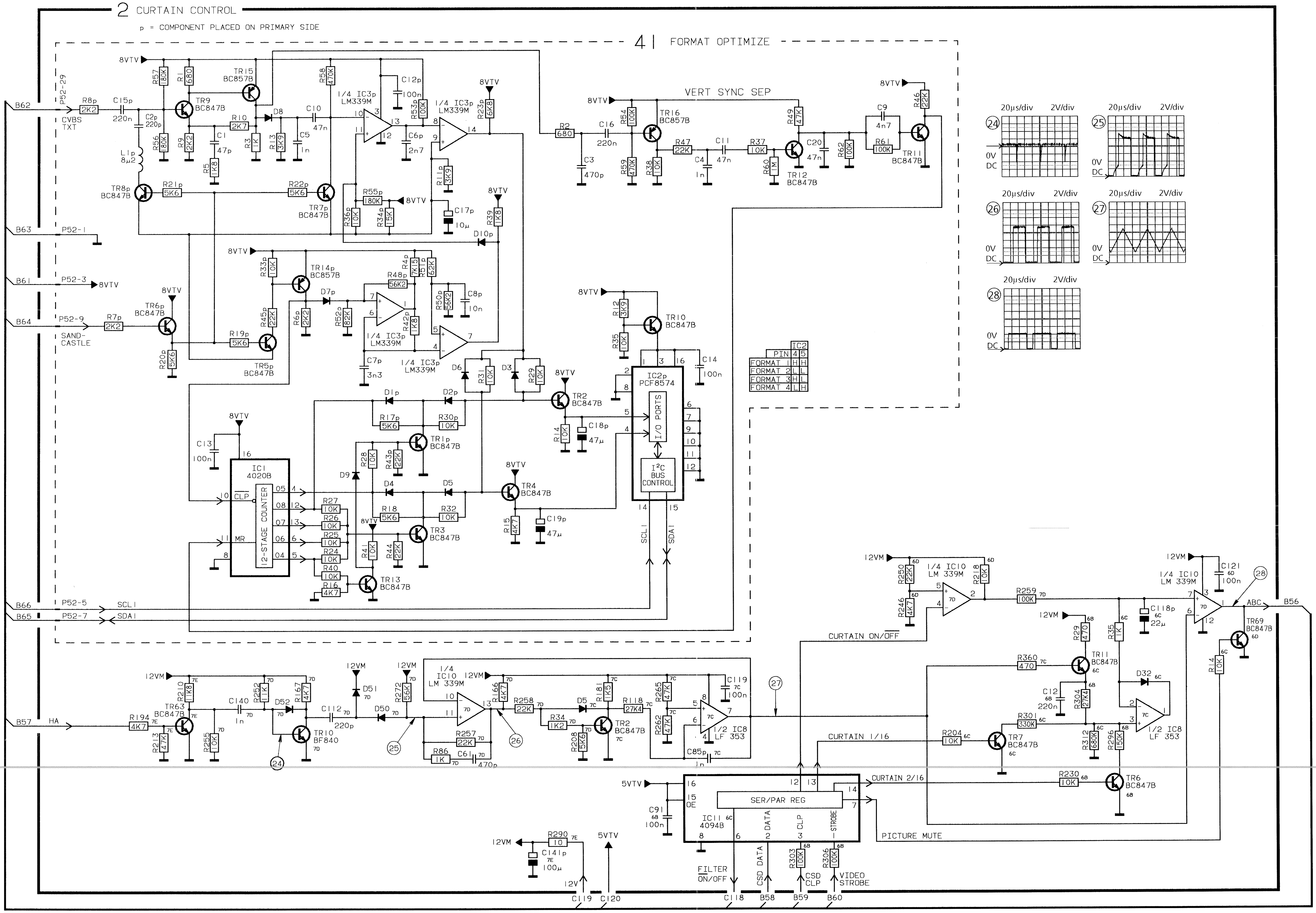
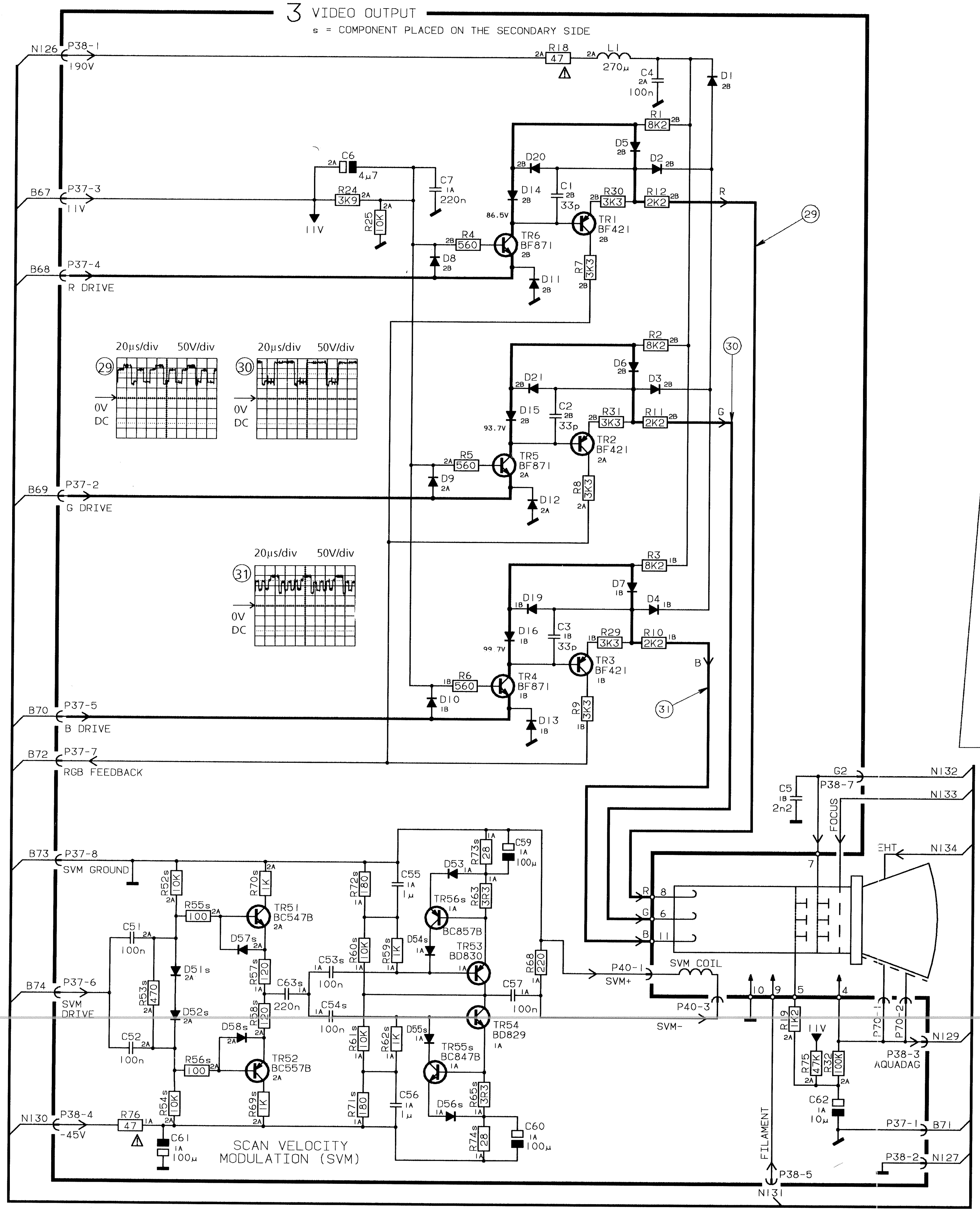

2 TELETEXT & LUMINANCE PEAKING
p = COMPONENT PLACED ON THE PRIMARY SIDE
J122
P31-6
W136
14V
P35-16
F121
P32-5
B41
B40
D119
D120
B50
HOR FLYBACK
B51
YDL-180ns
B55
SANDCASTLE
513
B54
Y
L5p 47μ
R12p 680
R13p 680
R9p 56
R8p 56
TR44p BC327-25
TR46p BC327-25
D29
D24 6V2
R26 100
R19 10K
R354 47K
TR52 BC847B
R112 2K7
R207 100K
R264 3K9
8V
TR70p BC327-25
TR55p BC327-25
R15p 1
R5p 1
R4p 1
R10 390
D20
8VTV
12V
5VTV
TR45p BC327-25
C124p 470μ
R65 330
D25 6V2
R222 4K64
R254 47K
TR26 BC547B
R224 5K36
R123 2K7
TR42 BC847B
R63 100
TR43 BC847B
R256 47K
R195 47K
R182 22K
C123 100n
B42
W135
J123
P31-3
P35-14
6VTV
L8p 47μ
TR50p ZTX690B
R7p 1R5
R2p 330
R3p 470
R236p 1
R1p 56
C36 100n
C100p 10μ
D35 5V6
R249 15K
TR1p BC547B
C118
B49
FILTER ON/OFF
TEXT CVBS
C143 100n
C142 100n
R315 47K
R135 680
R298 12K
TR25 BC847B
R313 22K
R243 560
TR71 BC857B
R231 470
R95 82
C47 120p
D6
C139 220p
L10 8μ2
R219 220
R119 220
R247 3K9
C50 100n
B44
B43
VERT FLYBACK
HA
R235 47K
R232 1K2
R234 22K
C111 100p
F124
F125
P33-10
P33-9
SCL2
SDA2
R307 220
R308 220
D44
D47 7V5
D46
D48 7V5
D43
D45
C54 100n
C55 100n
C56 100n
C57 100n
C58 100n
HOR SYNC
VERT SYNC
TEXT CVBS
CAS
RAS
READ/WRITE
D0
D1
D2
D3
I²C EN
VREF
FAST BLANK
R
G
B
RESET
IC6p
SDA 5273
TELETEXT PROCESSOR
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9
R283 100
R125 470
C27 100n
R316 820
R191 3K3
R36 100
R37 100
R38 100
C86p 10μ
R225 10K
X3p 20.5 MHz
C6 22p
C7 22p
C59 100n
B48
B45
B46
B47
IC5
HYB 514256
DRAM
262144X4
OE
IC5 IS ONLY MOUNTED IN SPECIAL TYPES
C22 100n
C24 33p
R79 560
TR30 BC847B
R94 1K
C77 220n
R115 1K
C97 220n
R25 220
R157 6K8
R144 4K7
C122 220n
TR49 BF840
TR48 BF840
R9C 680
R89 680
C81μ 100μ
R143 4K7
R142 220
R156 6K8
C95 220n
R93 4K7
R237 2K2
TR32 BC847B
R50 100
R116 1K
L7 4μ7
C133p 10μ
C114 220p
D19
R190 18K
C135p 1μ
D27
R91 1K
R78 10
R248 27K
R140 3K3
TR31 BC847B
R64 330
TR15 BC847B
R109 2K2
ADAPTIVE LUMINANCE PEAKING
R174 15K
R162 10K
D4
TR27 BC847B
R137 4K7
D2
D3
R229 10K
R136 470
TR14p BC547B
R142 100
TR29 BC847B
C92p 22μ
R70 1K5
R41 10K
C108p 1μ
TR16p BC547B
D49
R139 3K3
R18 680
R233 12K
R108 2K2
C46 100n
TR28 BC847B
C28 33p
R168 4K7
R121 2K2
R71 680
C49 470p
R122 2K2
R244 18K
C2 10p
R145 3K3
TR17 BC847B
C38 470p
R97 1K
R146 4K7
D10
C67 220n
R43 68
TR35 BC857B
R196 100K
R131 3K9
R251 100K
C103p 1μ
R96 1K
R158 6K8
TR18 BC847B
D7
D8
D9
R134 4K7
TR23 BC847B
R106 1K2
C37 22n
R104 1K2
NOISE REDUCTION
R72 470
R57 270
TR24 BC847B
C48 10n
TR37 BC857B
C113 100p
R56 270
R129 680
C102p 1μ
R130 10K
R58 330
TR13 BC847B
R80 680
R88 1K
TR12 BC847B
R127 3K3
C101 47p
TR33 BC857B
R124 4K7
R54 220
C94p 10μ
R128 4K7
R87 1K0
R253 47K
TR34 BC857B
R220 10K
C134p 1μ
R81 680
TR4 BC547B
R82 680
B53
YDL
SANDCASTLE
B52
513
19
20
21
22
23
20μs/div 0.5V/div
20μs/div 1V/div
0V
DC

DIAGRAM D CURTAIN CONTROL & FORMAT OPTIMIZE


2 CURTAIN CONTROL
p = COMPONENT PLACED ON PRIMARY SIDE
4 FORMAT OPTIMIZE
VERT SYNC SEP
B62
P52-29
CVBS TXT
B63
P52-1
B61
P52-3
8VTV
B64
P52-9
SAND-CASTLE
B66
P52-5
SCL1
B65
P52-7
SDA1
B57
HA
B56
ABC
TR15 BC857B
TR9 BC847B
TR8p BC847B
TR7p BC847B
TR14p BC857B
TR6p BC847B
TR5p BC847B
TR16 BC857B
TR12 BC847B
TR11 BC847B
TR10 BC847B
TR2 BC847B
TR1p BC847B
TR4 BC847B
TR3 BC847B
TR13 BC847B
1/4 IC3p LM339M
IC1 4020B
12-STAGE COUNTER
CLP
MR
IC2p PCF8574
I/O PORTS
I²C BUS CONTROL
1/4 IC10 LM 339M
1/2 IC8 LF 353
TR63 BC847B
TR10 BF840
TR2 BC847B
TR11 BC847B
TR7 BC847B
TR6 BC847B
TR69 BC847B
IC11 4094B
SER/PAR REG
DATA
CLP
STROBE
OE
12VM
5VTV
CURTAIN ON/OFF
CURTAIN 1/16
CURTAIN 2/16
PICTURE MUTE
FILTER ON/OFF
CSD DATA
CSD CLP
VIDEO STROBE
12V
C119
C120
C118
B58
B59
B60
20µs/div 2V/div
24
25
26
27
28
0V DC

	IC2
PIN	4 5
FORMAT 1	H H
FORMAT 2	L L
FORMAT 3	H L
FORMAT 4	L H

DIAGRAM E VIDEO OUTPUT


3 VIDEO OUTPUT
s = COMPONENT PLACED ON THE SECONDARY SIDE
N126 P38-1 190V
R18 47
L1 270μ
C4 100n
D1
R1 8K2
D5
D20
D2
C6 4μ7
C7 220n
R24 3K9
R25 10K
B67 P37-3 11V
11V
D14
C1 33p
R30 3K3
R12 2K2
R
TR1 BF421
86.5V
R4 560
TR6 BF871
D8
D11
R7 3K3
B68 P37-4 R DRIVE
29
20μs/div 50V/div
0V DC
30
20μs/div 50V/div
0V DC
R2 8K2
D6
D3
D21
D15
C2 33p
R31 3K3
R11 2K2
G
93.7V
TR2 BF421
R5 560
TR5 BF871
D9
D12
R8 3K3
B69 P37-2 G DRIVE
31
20μs/div 50V/div
0V DC
R3 8K2
D7
D4
D19
D16
C3 33p
R29 3K3
R10 2K2
B
99.7V
TR3 BF421
R6 560
TR4 BF871
D10
D13
R9 3K3
B70 P37-5 B DRIVE
B72 P37-7 RGB FEEDBACK
C5 2n2
G2
P38-7
FOCUS
N132
N133
EHT
N134
B73 P37-8 SVM GROUND
R52s 10K
R55s 100
TR51 BC547B
R70s 1K
C51 100n
D57s
D51s
R53s 470
D52s
B74 P37-6 SVM DRIVE
C52 100n
R56s 100
D58s
TR52 BC557B
R57s 120
R58s 120
R69s 1K
C63s 220n
C53s 100n
C54s 100n
R72s 180
R60s 10K
R59s 1K
R61s 10K
R62s 1K
R71s 180
C55 1μ
C56 1μ
D53
D54s
D55s
D56s
TR56s BC857B
TR53 BD830
TR54 BD829
TR55s BC847B
R73s 28
R63 3R3
R65s 3R3
R74s 28
C59 100μ
C60 100μ
C57 100n
R68 220
P40-1 SVM+
P40-3 SVM-
SVM COIL
R 8
G 6
B 11
7
10 9 5 4
R19 1K2
11V
R75 47K
R32 100K
C62 10μ
P70-1
P70-2
N129
P38-3 AQUADAG
P37-1 B71
P38-2 N127
FILAMENT
P38-5
N131
N130 P38-4 -45V
R76 47
C61 100μ
R54s 10K
SCAN VELOCITY MODULATION (SVM)

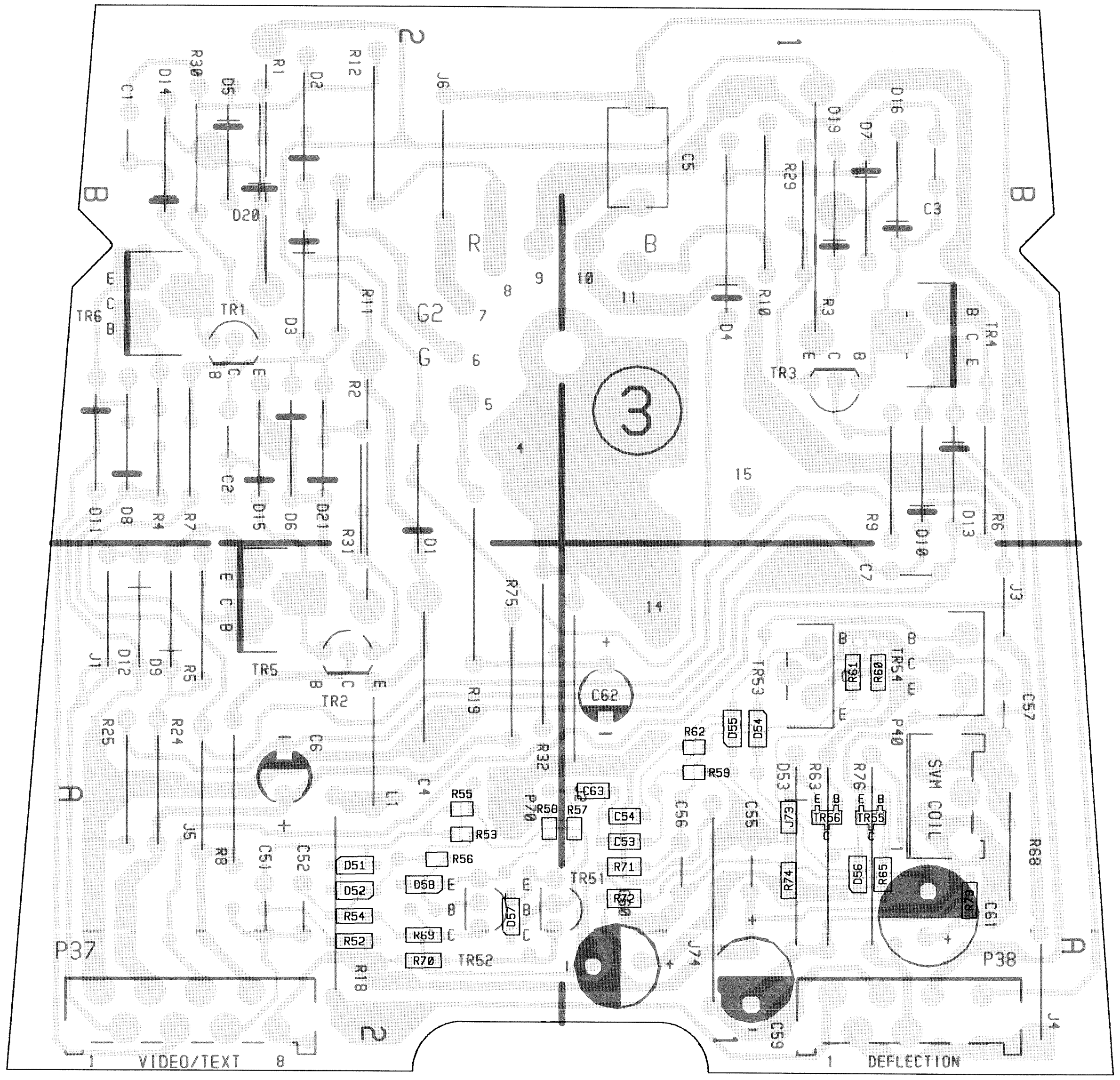

3
B
A
2
1
TR1
TR2
TR3
TR4
TR5
TR6
TR51
TR52
TR53
TR54
TR55
TR56
G2
G
R
B
C62
P37
P38
VIDEO/TEXT
DEFLECTION
SVM COIL
P40
P70
J74
J4
J5
J6
14
15

DIAGRAM F VIDEO SWITCHING **PCB drawings for PCB14 see page 2-25 and 2-26** **Oscilloscope pictures for diagram F see page 2-5**

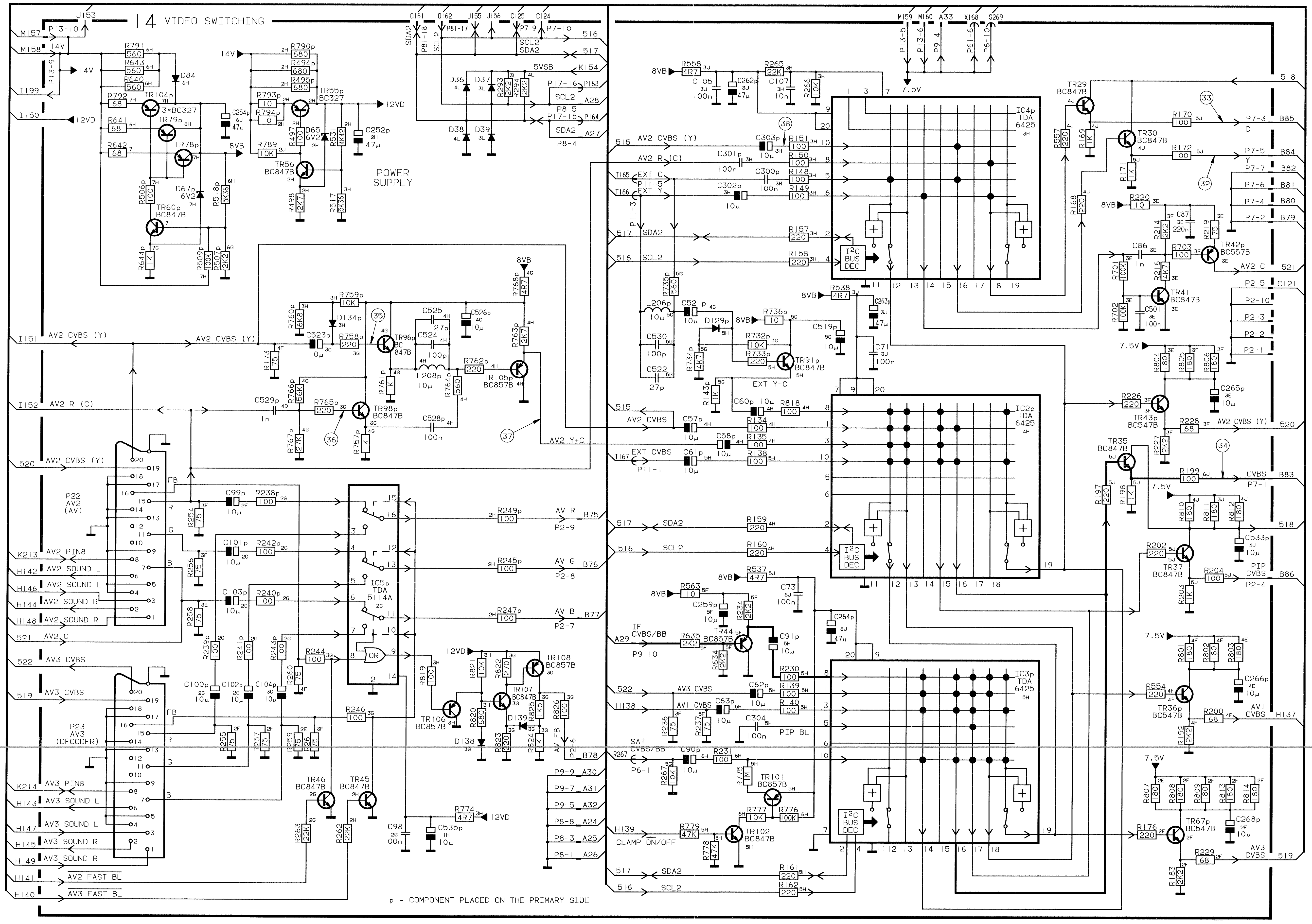
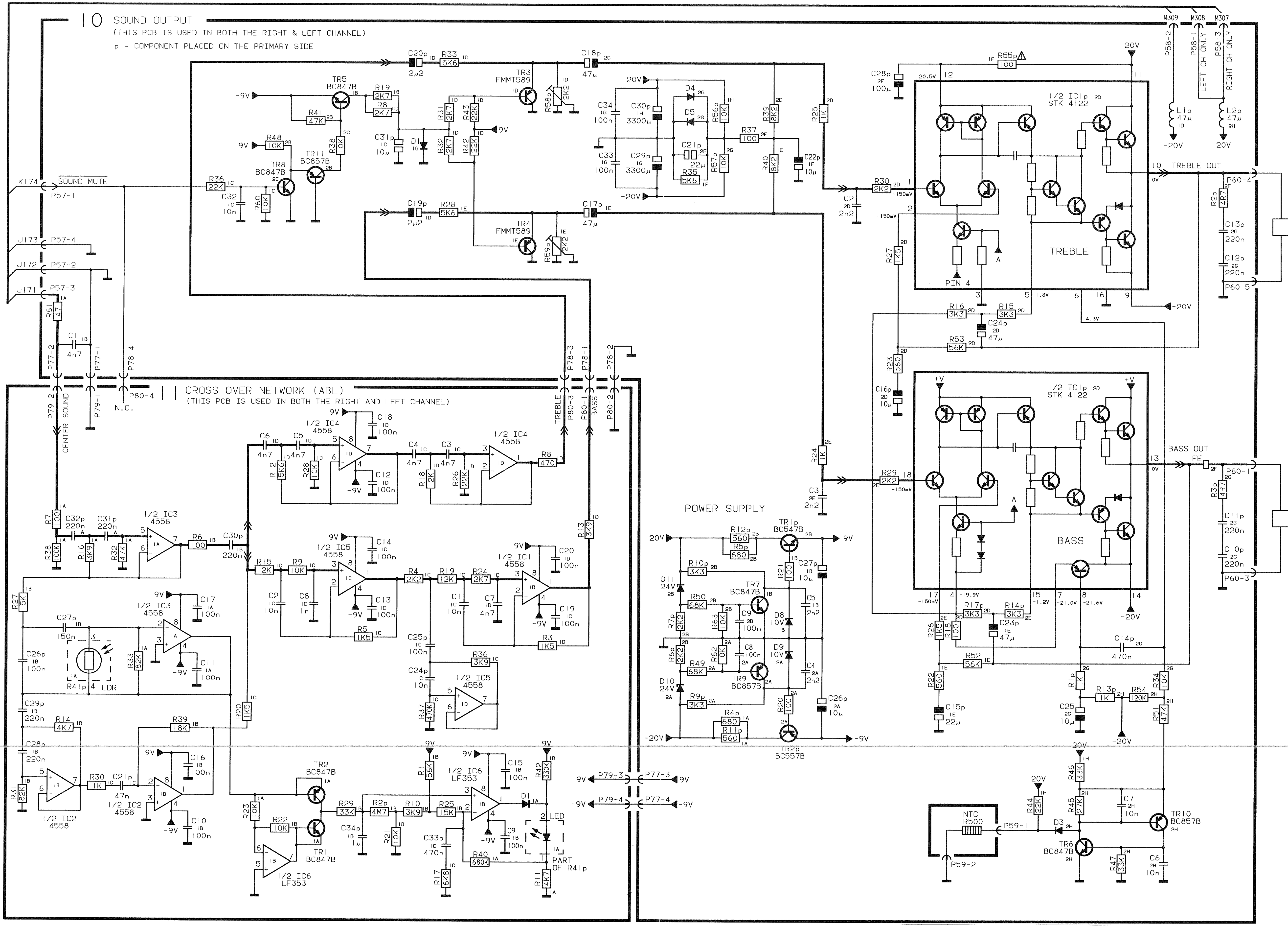
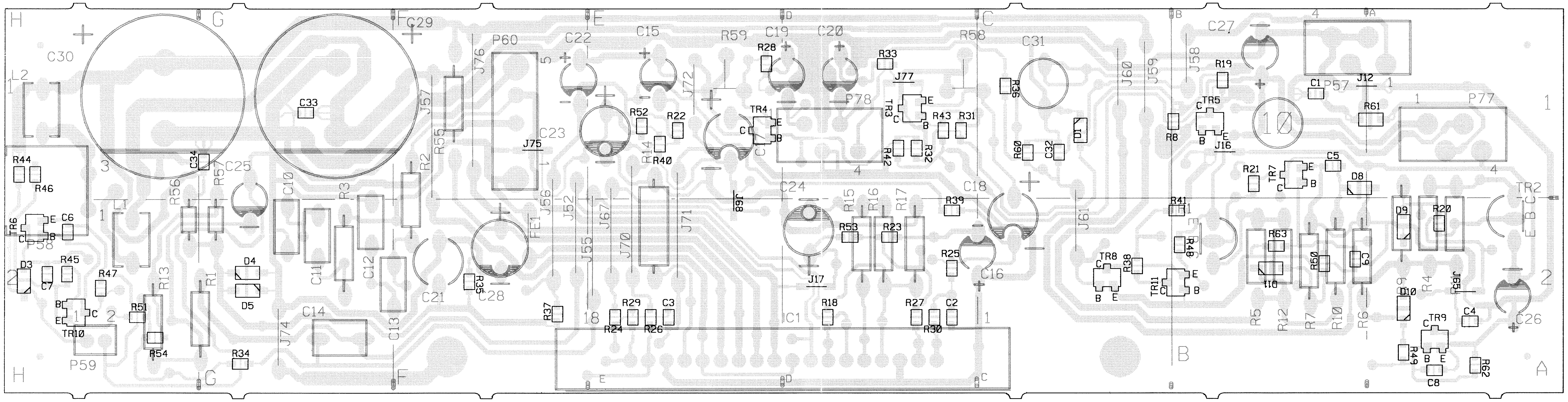

14 VIDEO SWITCHING
POWER SUPPLY
M157
M158
I199
I150
I151 AV2 CVBS (Y)
I152 AV2 R (C)
520 AV2 CVBS (Y)
P22 AV2 (AV)
K213 AV2 PIN8
H142 AV2 SOUND L
H146 AV2 SOUND L
H144 AV2 SOUND R
H148 AV2 SOUND R
521 AV2 C
522 AV3 CVBS
519 AV3 CVBS
P23 AV3 (DECODER)
K214 AV3 PIN8
H143 AV3 SOUND L
H147 AV3 SOUND L
H145 AV3 SOUND R
H149 AV3 SOUND R
H141 AV2 FAST BL
H140 AV3 FAST BL
14V
12VD
8VB
TR104p 3×BC327
TR79p
TR78p
TR60p BC847B
TR55p BC327
TR56 BC847B
D84
D65 6V2
D67p 6V2
TR96p BC847B
TR105p BC857B
TR98p BC847B
TR108 BC857B
TR107 BC847B
TR106 BC857B
TR46 BC847B
TR45 BC847B
IC5p TDA 5114A
AV R P2-9 B75
AV G P2-8 B76
AV B P2-7 B77
AV FB P2-6 B78
P9-9 A30
P9-7 A31
P9-5 A32
P8-8 A24
P8-3 A25
P8-1 A26
AV2 Y+C
516 517 K154 P163 A28 P164 A27
SCL2 SDA2 5VSB
P17-16 P8-5 P17-15 P8-4
IC4p TDA 6425
IC2p TDA 6425
IC3p TDA 6425
I2C BUS DEC
515 AV2 CVBS (Y)
AV2 R (C)
I165 EXT C
I166 EXT Y
P11-5 P11-3
EXT Y+C
I167 EXT CVBS P11-1
A29 IF CVBS/BB P9-10
522 AV3 CVBS
H138 AV1 CVBS
PIP BL
R267 SAT CVBS/BB P6-1
H139 CLAMP ON/OFF
TR44 BC857B
TR91p BC847B
TR101 BC857B
TR102 BC847B
M159 M160 A33 X168 S269
P13-5 P13-6 P9-4 P61-6 P6-10
7.5V
TR29 BC847B
TR30 BC847B
TR42p BC557B
TR41 BC847B
TR43p BC547B
TR35 BC847B
TR37 BC847B
TR36p BC547B
TR67p BC547B
518
P7-3 C B85
P7-5 Y B84
P7-7 B82
P7-6 B81
P7-4 B80
P7-2 B79
AV2 C 521
P2-5 C121
P2-10
P2-3
P2-2
P2-1
AV2 CVBS (Y) 520
CVBS P7-1 B83
PIP CVBS P2-4 B86
AV1 CVBS H137
AV3 CVBS 519
p = COMPONENT PLACED ON THE PRIMARY SIDE

DIAGRAM G SOUND OUTPUT & ABL


10 SOUND OUTPUT
(THIS PCB IS USED IN BOTH THE RIGHT & LEFT CHANNEL)
p = COMPONENT PLACED ON THE PRIMARY SIDE
11 CROSS OVER NETWORK (ABL)
(THIS PCB IS USED IN BOTH THE RIGHT AND LEFT CHANNEL)
POWER SUPPLY
SOUND MUTE
K174
P57-1
J173
P57-4
J172
P57-2
J171
P57-3
CENTER SOUND
N.C.
TREBLE
BASS
1/2 IC1p STK 4122
TREBLE
BASS
TREBLE OUT
BASS OUT
LEFT CH ONLY
RIGHT CH ONLY
M309
M308
M307
P58-2
P58-1
P58-3
P60-4
P60-5
P60-1
P60-3
PIN 4
1/2 IC4 4558
1/2 IC5 4558
1/2 IC1 4558
1/2 IC3 4558
1/2 IC2 4558
1/2 IC6 LF353
LDR
LED
PART OF R41p
TR5 BC847B
TR8 BC847B
TR11 BC857B
TR3 FMMT589
TR4 FMMT589
TR1p BC547B
TR7 BC847B
TR9 BC857B
TR2p BC557B
TR2 BC847B
TR1 BC847B
TR10 BC857B
TR6 BC847B
NTC R500
P59-1
P59-2
P79-3
P77-3
P79-4
P77-4
20V
-20V
9V
-9V

PCB 10


H
G
F
E
D
C
B
A
C29
C30
L2
C33
P60
C22
C15
R59
C19
C20
R28
R33
J77
R58
C31
J60
J59
J58
C27
R19
P57
J12
P77
J76
J57
J75
C23
J72
TR4
P78
TR3
R43
R31
R36
R60
C32
D1
R8
TR5
J16
R61
C1
R44
R46
C34
R57
R56
C25
C10
R3
R2
R55
R52
R22
R14
R40
R42
R32
C5
R21
TR7
D8
TR2
L1
TR6
C6
P58
J56
J52
J67
J71
J68
C24
R15
R16
R17
R39
C18
J61
R41
R48
D9
R20
D3
C7
R45
R47
R13
R1
D4
D5
C11
C12
C21
C28
R35
FE1
J55
J70
R53
R23
R25
C16
TR8
R38
TR11
R63
I10
R50
C9
R4
J65
C26
TR10
R51
R54
C14
J74
C13
R37
R29
C3
R24
R26
IC1
R18
R27
C2
R30
R5
R12
R7
R10
R6
D10
TR9
C4
R49
C8
R62
R34
P59
J17

PCB 11

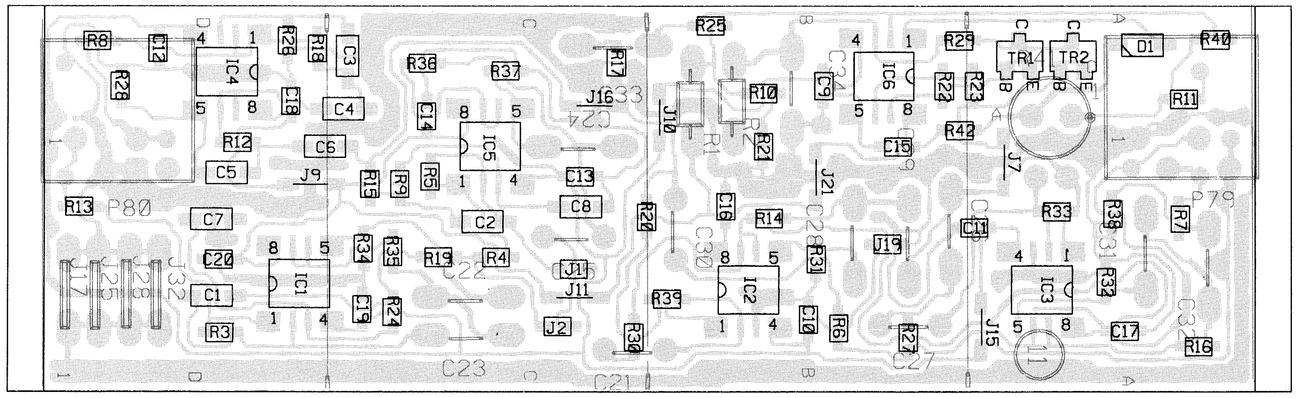
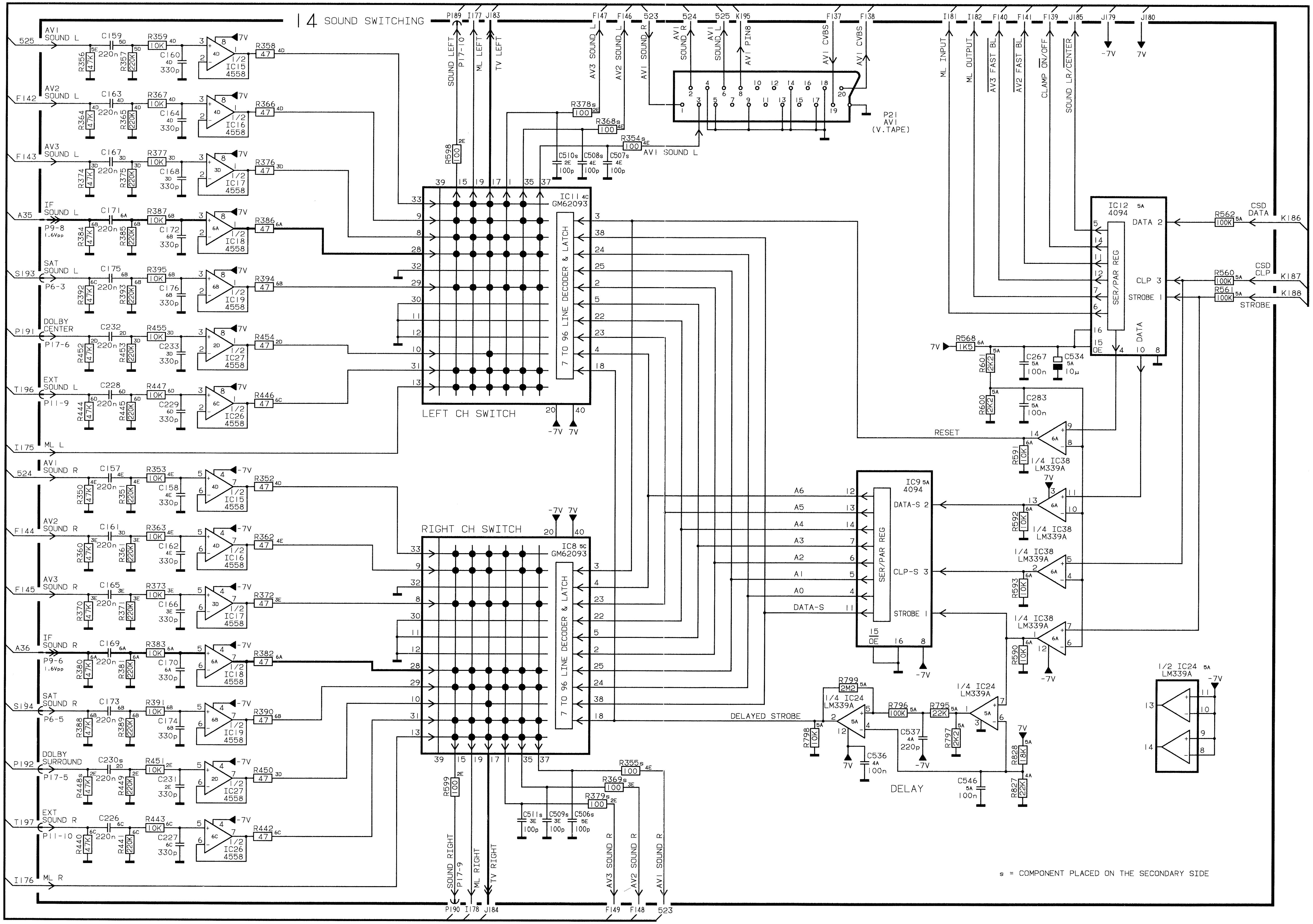
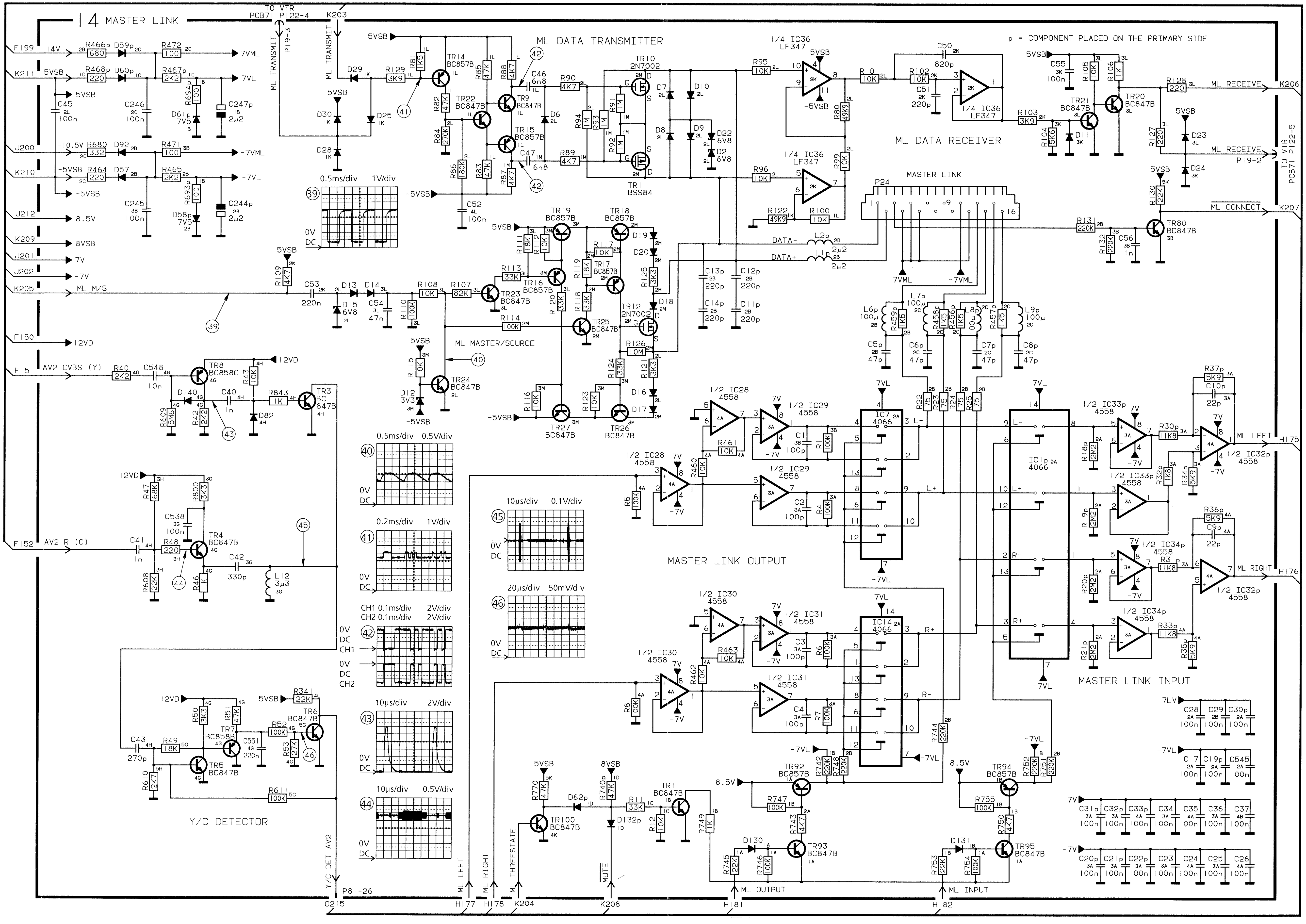

R8
C12
IC4
R29
R18
C3
R36
R37
R17
J16
C33
R25
R10
IC6
R29
TR1
TR2
D1
R40
R28
C18
C4
C14
IC5
J10
R1
C9
R22
R23
R11
R12
C6
R2
R42
C15
J7
C5
J9
R15
R9
R5
C13
J21
R13
P80
C8
R20
C16
R14
C11
R33
R39
R7
P79
C7
C2
C30
C28
R31
J19
C20
IC1
R34
R35
R19
R4
J11
IC2
IC3
R32
C1
C19
R24
C22
R3
J2
R30
C10
R6
R21
J15
C17
R16
C23
C21
C27
C32
J32
J17

DIAGRAM H SOUND SWITCHING **PCB drawings for PCB14 see page 2-25 and 2-26**

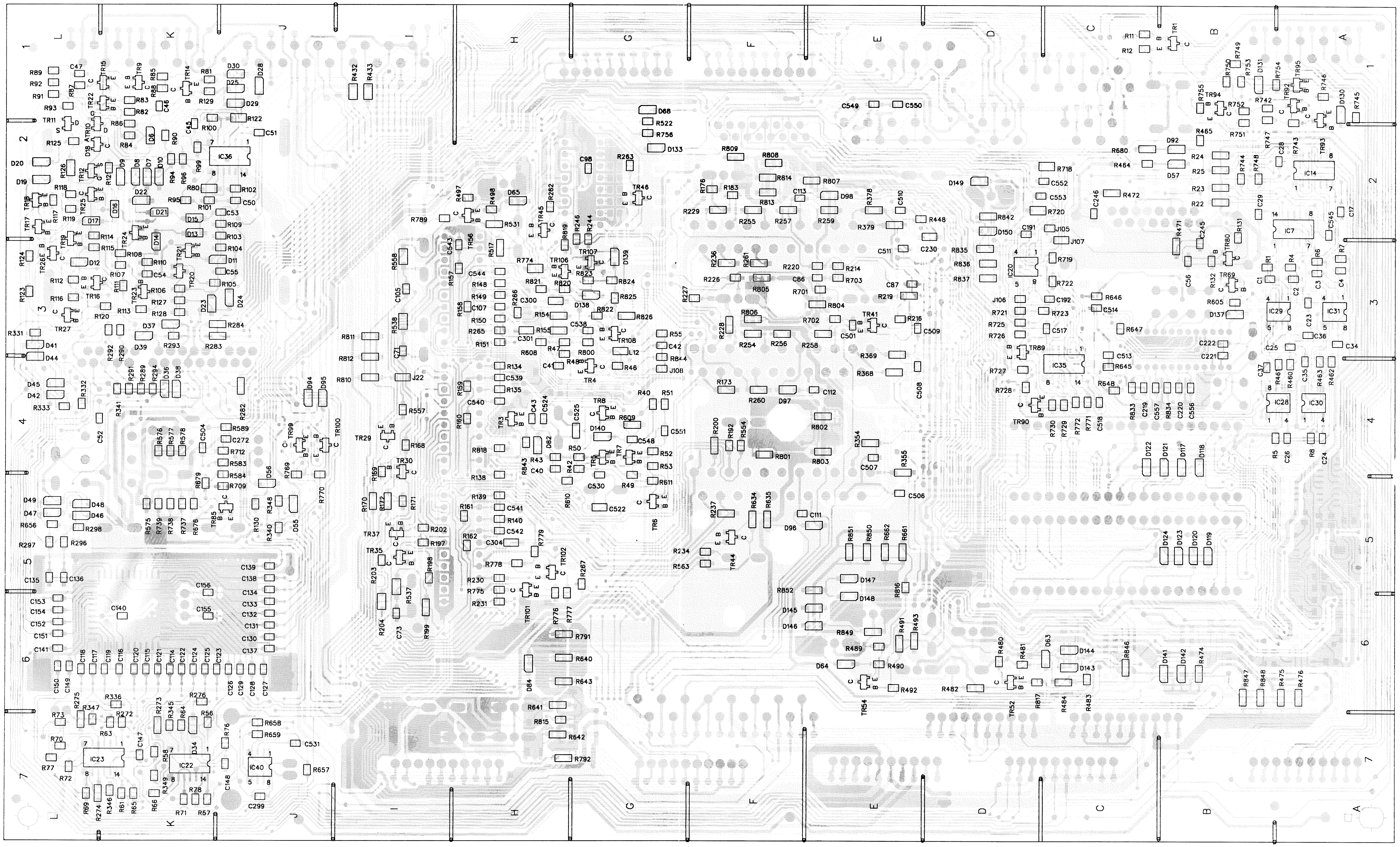

14 SOUND SWITCHING
525 AV1 SOUND L
F142 AV2 SOUND L
F143 AV3 SOUND L
A35 IF SOUND L P9-8 1.6Vpp
S193 SAT SOUND L P6-3
P191 DOLBY CENTER P17-6
T196 EXT SOUND L P11-9
I175 ML L
524 AV1 SOUND R
F144 AV2 SOUND R
F145 AV3 SOUND R
A36 IF SOUND R P9-6 1.6Vpp
S194 SAT SOUND R P6-5
P192 DOLBY SURROUND P17-5
T197 EXT SOUND R P11-10
I176 ML R
IC15 4558
IC16 4558
IC17 4558
IC18 4558
IC19 4558
IC27 4558
IC26 4558
IC11 GM62093
LEFT CH SWITCH
IC8 GM62093
RIGHT CH SWITCH
7 TO 96 LINE DECODER & LATCH
-7V
7V
P189 I177 J183
SOUND LEFT P17-10
ML LEFT
TV LEFT
F147 F146 523 524 525 K195
AV3 SOUND L
AV2 SOUND L
AV1 SOUND R
AV1 SOUND R
AV1 SOUND L
AV1 PIN8
F137 F138
AV1 CVBS
AV1 CVBS
P21 AV1 (V.TAPE)
I181 I182 F140 F141 F139 J185 J179 J180
ML INPUT
ML OUTPUT
AV3 FAST BL
AV2 FAST BL
CLAMP ON/OFF
SOUND LR/CENTER
IC12 4094
SER/PAR REG
DATA 2
CLP 3
STROBE 1
CSD DATA K186
CSD CLP K187
STROBE K188
R562 100K
R560 100K
R561 100K
R568 1K5
R601 2K2
R600 2K2
C267 100n
C534 10µ
C283 100n
RESET
1/4 IC38 LM339A
IC9 4094
A6 A5 A4 A3 A2 A1 A0 DATA-S
DATA-S 2
CLP-S 3
STROBE 1
DELAYED STROBE
1/4 IC24 LM339A
R799 2M2
R798 10K
R796 100K
R795 22K
R797 2K2
C537 220p
C536 100n
C546 100n
R828 18K
R827 22K
DELAY
1/2 IC24 LM339A
R591 10K
R592 10K
R593 10K
R590 10K
R598 100
R599 100
C510s 100p
C508s 100p
C507s 100p
R378s 100
R368s 100
R354s 100
C511s 100p
C509s 100p
C506s 100p
R355s 100
R369s 100
R379s 100
SOUND RIGHT P17-9
ML RIGHT
TV RIGHT
AV3 SOUND R
AV2 SOUND R
AV1 SOUND R
P190 I178 J184
F149 F148 523

s = COMPONENT PLACED ON THE SECONDARY SIDE

DIAGRAM I MASTER LINK **PCB drawings for PCB14 see page 2-25 and 2-26**


14 MASTER LINK
TO VTR PCB71 P122-4
K203
ML TRANSMIT P19-3
ML TRANSMIT
ML DATA TRANSMITTER
p = COMPONENT PLACED ON THE PRIMARY SIDE
ML DATA RECEIVER
ML RECEIVE K206
ML RECEIVE P19-2
TO VTR PCB71 P122-5
ML CONNECT K207
MASTER LINK P24
DATA-
DATA+
F199 14V
K211 5VSB
J200 -10.5V
K210 -5VSB
J212 8.5V
K209 8VSB
J201 7V
J202 -7V
K205 ML M/S
F150 12VD
F151 AV2 CVBS (Y)
F152 AV2 R (C)
7VML
7VL
-7VML
-7VL
ML MASTER/SOURCE
Y/C DETECTOR
MASTER LINK OUTPUT
MASTER LINK INPUT
1/4 IC36 LF347
1/2 IC28 4558
1/2 IC29 4558
1/2 IC30 4558
1/2 IC31 4558
1/2 IC33p 4558
1/2 IC34p 4558
1/2 IC32p 4558
IC7 4066
IC14 4066
IC1p 4066
ML LEFT H175
ML RIGHT H176
Y/C DET AV2
P81-26
0215
ML LEFT H177
ML RIGHT H178
ML THREESTATE K204
MUTE K208
ML OUTPUT H181
ML INPUT H182
TR10 2N7002
TR11 BSS84
TR12 2N7002
0.5ms/div 1V/div
0.5ms/div 0.5V/div
0.2ms/div 1V/div
CH1 0.1ms/div 2V/div
CH2 0.1ms/div 2V/div
10μs/div 2V/div
10μs/div 0.5V/div
10μs/div 0.1V/div
20μs/div 50mV/div
0V DC

PCB 14


L
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
R89
R92
R91
R93
C47
TR15
TR9
R85
TR14
R81
D30
D28
D25
D29
R129
R122
R100
C51
IC36
TR11
R125
D20
D19
R118
R86
R84
R82
R83
R80
R102
C50
R101
R95
D22
D21
D15
D13
D14
D16
D17
R119
R117
TR17
TR18
TR19
TR25
TR26
TR24
TR21
TR20
R109
R103
R104
D11
C55
R105
C53
R114
R115
R108
D12
R110
C54
R112
R107
R106
R127
R128
R116
TR16
R120
R113
TR27
R331
R124
R123
D41
D44
D37
D39
D23
D24
R284
R293
R283
R292
R290
R291
R289
R294
D36
D38
D45
D42
R333
R332
R341
C52
R282
R576
R577
R578
C504
R589
C272
R712
R583
R584
R709
R679
D56
R769
TR99
TR100
R770
D94
D95
D49
D48
D47
D46
R656
R298
R297
R296
R675
R739
R738
R737
R676
TR85
R130
R340
R348
D55
C135
C136
C153
C154
C152
C151
C141
C140
C156
C155
C139
C138
C134
C133
C132
C131
C130
C137
C118
C117
C119
C116
C120
C115
C121
C114
C122
C124
C125
C123
C150
C149
C126
C129
C128
C127
R73
R275
R347
R336
R272
R273
R345
R64
R276
R56
R76
R63
R70
IC23
C147
R58
D34
IC22
IC40
C148
R77
R72
R69
R274
R346
R61
R65
R66
R349
R78
R71
R57
C299
R658
R659
C531
R657
R432
R433
R811
R812
R810
R558
C105
R538
C71
J22
R557
R168
TR29
TR30
R169
R170
R172
R171
R202
R197
TR37
TR35
R198
R203
R537
C73
R204
R199
R497
R498
D65
R789
C543
TR56
R517
R531
C544
R148
R149
C107
R150
R265
R151
R157
R158
R266
C300
R134
C539
R135
C540
R159
R160
TR3
C43
C524
R818
R138
R843
C40
R139
R161
C541
R140
C542
R162
C304
R779
TR102
R778
R230
R775
R231
R267
TR101
R776
R777
R791
R640
R643
D84
R641
R815
R642
R792
TR45
R262
R246
R244
R819
R774
TR106
TR107
D139
R821
R823
R820
R824
R825
D138
R822
R826
R154
C538
R155
TR108
C301
R47
R800
R608
C41
R48
L12
R46
TR4
TR8
C525
R609
D140
C548
R50
R42
TR5
TR7
R52
R53
C530
R49
R611
R810
C522
TR6
D82
D68
R522
R756
D133
C98
R263
TR46
R40
R51
R55
C42
R844
J108
C551
R176
R183
R809
R808
R814
R807
C113
D98
R813
R229
R255
R257
R259
R378
C510
R379
R448
C511
C230
R236
R261
R220
R214
R226
C86
R703
R805
R701
R227
C87
R219
R804
R228
R806
R702
TR41
R216
C509
R254
R256
R258
C501
R369
R368
R173
R260
D97
C112
C508
R802
R200
R192
R554
R354
R801
R803
C507
R355
C506
R237
R634
R635
C111
D96
R234
R563
TR44
R851
R850
R662
R661
D147
D148
R852
D145
D146
R816
R849
R491
R493
R489
D64
R490
TR54
R492
C549
C550
D149
R842
D150
C191
J105
J107
R835
R836
R837
C20
R719
R722
J106
R721
R725
R726
C192
R723
C517
R646
C514
R647
TR89
IC35
C513
R645
R727
R728
R648
TR90
R730
R729
R772
R771
C518
R833
C219
C557
R834
C220
C556
D122
D121
D117
D118
D124
D123
D120
D119
R480
R481
D63
D144
D143
R846
R482
TR52
R817
R484
R483
D141
D142
R474
R847
R848
R475
R476
R11
R12
TR1
R749
R750
R753
D131
R754
TR95
R746
R755
TR94
R752
R742
TR92
D130
R745
R465
R751
R680
R464
D92
R24
R25
D57
R23
R22
R747
C28
R743
TR93
R744
R748
IC14
R718
C552
C553
R720
C246
R472
C29
IC7
C545
C17
R471
C245
R131
TR80
R1
R4
R6
R7
C56
R132
TR69
C1
C2
C3
C4
R605
D137
IC29
IC31
C23
C36
C34
C222
C221
C25
C37
R461
R460
C35
R463
R462
IC28
IC30
R5
C26
R8
C24

PCB 14

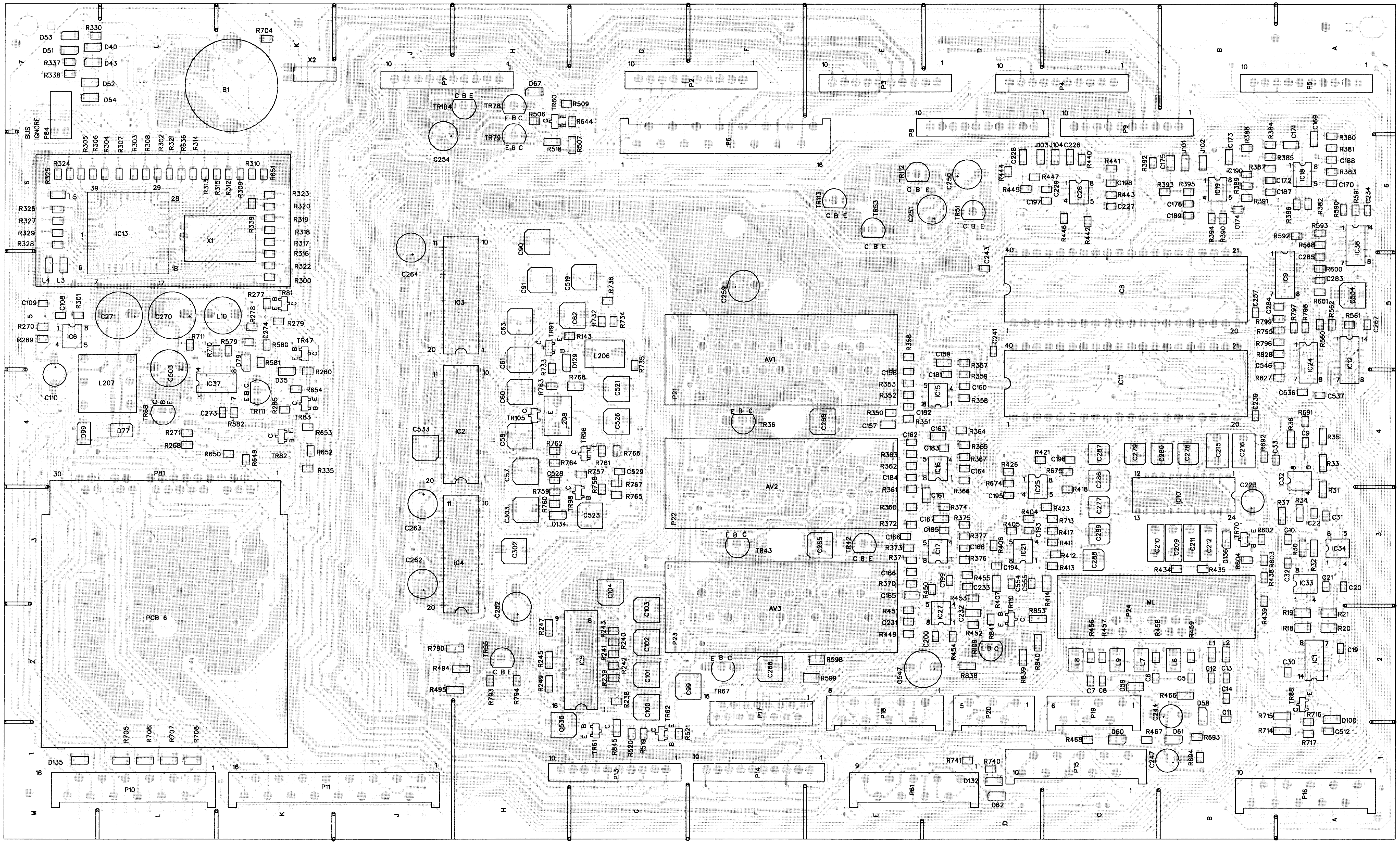


DIAGRAM J SOUND CONTROL PCB drawings for PCB14 see page 2-25 and 2-26

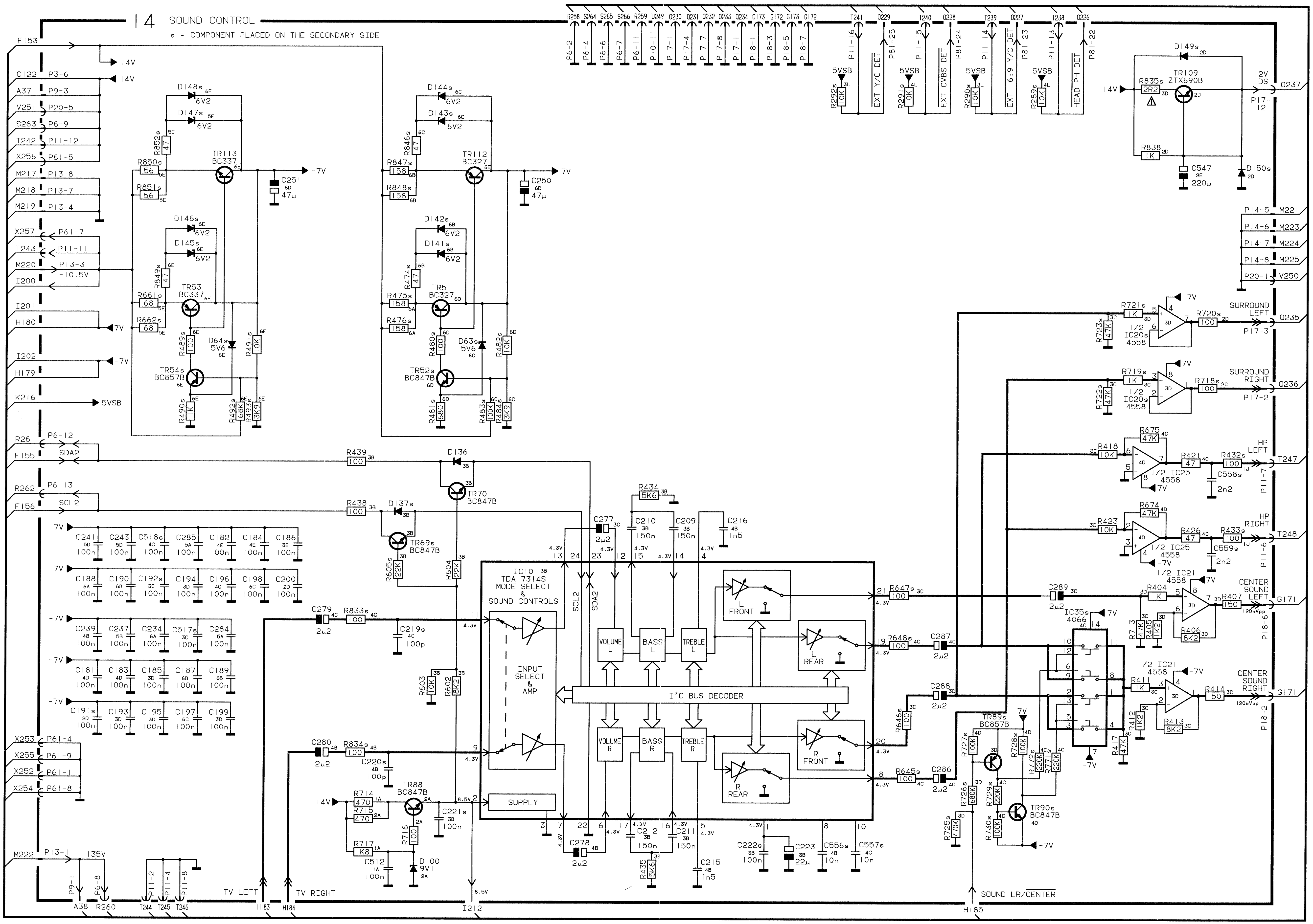
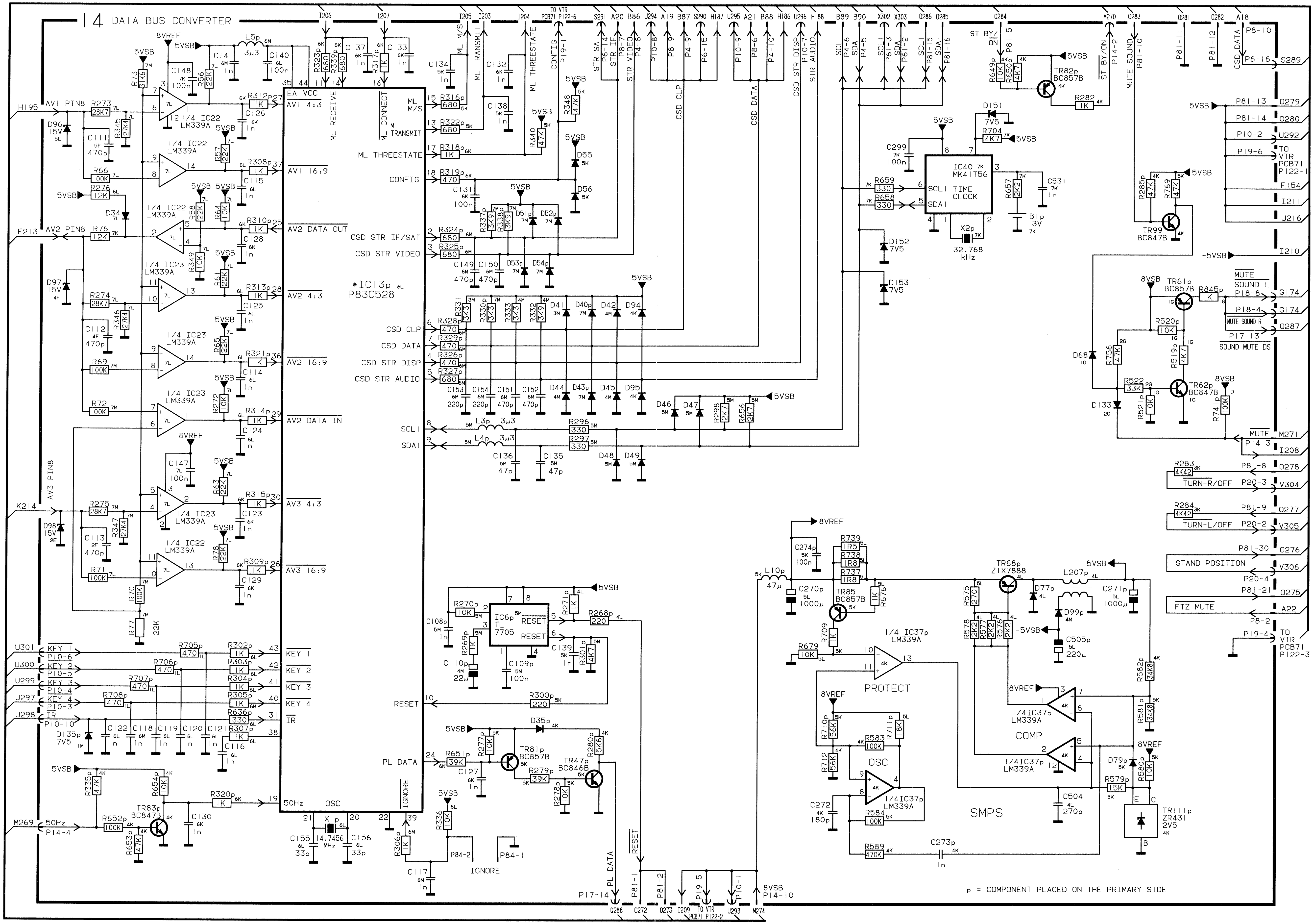

14 SOUND CONTROL
s = COMPONENT PLACED ON THE SECONDARY SIDE
F153
C122 P3-6
A37 P9-3
V251 P20-5
S263 P6-9
T242 P11-12
X256 P61-5
M217 P13-8
M218 P13-7
M219 P13-4
X257 P61-7
T243 P11-11
M220 P13-3
I200 -10.5V
I201
H180
I202
H179
K216
5VSB
14V
7V
-7V
R261 P6-12
F155 SDA2
R262 P6-13
F156 SCL2
TR113 BC337
TR112 BC327
TR53 BC337
TR51 BC327
TR54s BC857B
TR52s BC847B
C251 47µ
C250 47µ
D64s 5V6
D63s 5V6
D148s 6V2
D147s 6V2
D146s 6V2
D145s 6V2
D144s 6V2
D143s 6V2
D142s 6V2
D141s 6V2
R439 100
R438 100
D136
D137s
TR70 BC847B
TR69s BC847B
R605s 22K
R604 22K
C279 2µ2
R833s 100
C219s 100p
C280 2µ2
R834s 100
C220s 100p
TR88 BC847B
R714 470
R715 470
R717 1K8
R716 100
C512 100n
D100 9V1
C221s 100n
IC10 TDA 7314S MODE SELECT & SOUND CONTROLS
INPUT SELECT & AMP
SUPPLY
VOLUME L
BASS L
TREBLE L
VOLUME R
BASS R
TREBLE R
I²C BUS DECODER
L FRONT
L REAR
R FRONT
R REAR
SCL2
SDA2
R434 5K6
C277 2µ2
C210 150n
C209 150n
C216 1n5
C278 2µ2
C212 150n
C211 150n
C215 1n5
R435 5K6
C222s 100n
C223 22µ
C556s 10n
C557s 10n
TV LEFT
TV RIGHT
8.5V
SOUND LR/CENTER
A38 R260
T244 T245 T246
H183 H184
I212
H185
M222 P13-1 135V
X253 P61-4
X255 P61-9
X252 P61-1
X254 P61-8
R647s 100
R648s 100
R646s 100
R645s 100
C289 2µ2
C287 2µ2
C288 2µ2
C286 2µ2
IC35s 4066
TR89s BC857B
TR90s BC847B
R727s 100K
R728s 100K
R726s 680K
R729s 220K
R730s 100K
R725s 470K
R772s 220K
R771 220K
R417 47K
1/2 IC21 4558
R404 1K
R407 150
R406 8K2
R411 1K
R414 150
R413 8K2
CENTER SOUND LEFT
CENTER SOUND RIGHT
120mVpp
G171
P18-6
P18-2
R418 10K
R675 47K
R421 47
R432s 100
C558s 2n2
1/2 IC25 4558
HP LEFT
T247
P11-7
R423 10K
R674 47K
R426 47
R433s 100
C559s 2n2
HP RIGHT
T248
P11-6
R721s 1K
R720s 100
R723s 47K
1/2 IC20s 4558
SURROUND LEFT
Q235
P17-3
R719s 1K
R718s 100
R722s 47K
SURROUND RIGHT
Q236
P17-2
P14-5 M221
P14-6 M223
P14-7 M224
P14-8 M225
P20-1 V250
D149s
TR109 ZTX690B
R835s 2R2
R838 1K
C547 220µ
D150s
12V DS
Q237
P17-12
5VSB
R292s 10K
R291s 10K
R290s 10K
R289s 10K
EXT Y/C DET
EXT CVBS DET
EXT 16:9 Y/C DET
HEAD PH DET
P11-16 P81-25
P11-15 P81-24
P11-14 P81-23
P11-13 P81-22
T241 Q229 T240 Q228 T239 Q227 T238 Q226
R258 S264 S265 S266 R259 U249 Q230 Q231 Q232 Q233 Q234 G173 G172 G173 G172
P6-2 P6-4 P6-6 P6-7 P6-11 P10-11 P17-1 P17-4 P17-7 P17-8 P17-11 P18-1 P18-3 P18-5 P18-7

DIAGRAM K DATA BUS CONVERTER **PCB drawings for PCB14 see page 2-25 and 2-26**


14 DATA BUS CONVERTER
*IC13p P83C528
EA VCC
AV1 4:3
AV1 16:9
AV2 DATA OUT
AV2 4:3
AV2 16:9
AV2 DATA IN
AV3 4:3
AV3 16:9
KEY 1
KEY 2
KEY 3
KEY 4
IR
50Hz
OSC
ML RECEIVE
ML CONNECT
ML M/S
ML TRANSMIT
ML THREESTATE
CONFIG
CSD STR IF/SAT
CSD STR VIDEO
CSD CLP
CSD DATA
CSD STR DISP
CSD STR AUDIO
SCL1
SDA1
RESET
PL DATA
IGNORE
X1p 14.7456 MHz
1/4 IC22 LM339A
1/4 IC23 LM339A
H195
AV1 PIN8
F213
AV2 PIN8
K214
AV3 PIN8
U301
U300
U299
U297
U298
M269
50Hz P14-4
IC40 MK41T56 TIME CLOCK
X2p 32.768 kHz
B1p 3V
IC6p TL 7705
TR82p BC857B
TR99 BC847B
TR61p BC857B
TR62p BC847B
TR81p BC857B
TR47p BC846B
TR83p BC847B
TR68p ZTX7888
TR85 BC857B
TR111p ZR431 2V5
ST BY/ON
MUTE SOUND
MUTE SOUND L
MUTE SOUND R
SOUND MUTE DS
TURN-R/OFF
TURN-L/OFF
STAND POSITION
FTZ MUTE
TO VTR PCB71 P122-1
TO VTR PCB71 P122-3
TO VTR PCB71 P122-2
TO VTR PCB71 P122-6
1/4 IC37p LM339A
PROTECT
COMP
OSC
SMPS
8VREF
5VSB
-5VSB
8VSB P14-10
P17-14
P84-1
P84-2

p = COMPONENT PLACED ON THE PRIMARY SIDE

DIAGRAM L NICAM SYSTEM B/G/I/L

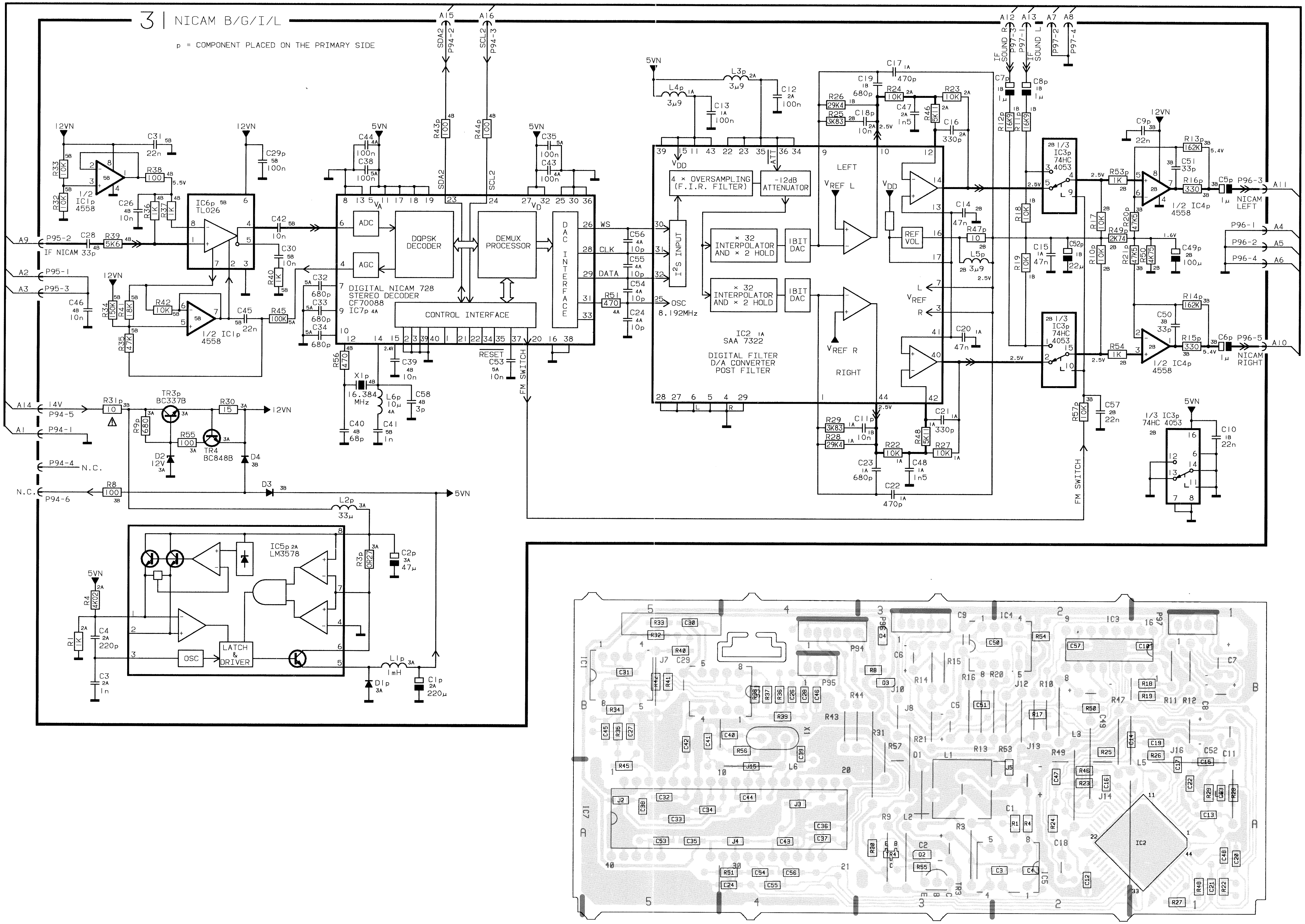

3 | NICAM B/G/I/L
p = COMPONENT PLACED ON THE PRIMARY SIDE
A15 SDA2 P94-2
A16 SCL2 P94-3
A12 IF SOUND R P97-3
A13 IF SOUND L P97-1
A7 P97-2
A8 P97-4
A9 P95-2 IF NICAM
A2 P95-1
A3 P95-3
A14 14V P94-5
A1 P94-1
P94-4 N.C.
N.C. P94-6
IC6p TL026
1/2 IC1p 4558
DIGITAL NICAM 728 STEREO DECODER CF70088 IC7p
ADC
AGC
DQPSK DECODER
DEMUX PROCESSOR
DAC INTERFACE
CONTROL INTERFACE
RESET
FM SWITCH
X1p 16.384 MHz
WS
CLK
DATA
OSC 8.192MHz
I2S INPUT
4 × OVERSAMPLING (F.I.R. FILTER)
-12dB ATTENUATOR
× 32 INTERPOLATOR AND × 2 HOLD
1BIT DAC
LEFT
RIGHT
VREF L
VREF R
REF VOL
IC2 SAA 7322
DIGITAL FILTER D/A CONVERTER POST FILTER
1/3 IC3p 74HC 4053
1/2 IC4p 4558
NICAM LEFT
NICAM RIGHT
P96-3 A11
P96-1 A4
P96-2 A5
P96-4 A6
P96-5 A10
TR3p BC337B
TR4 BC848B
12VN
5VN
5VN
IC5p LM3578
LATCH & DRIVER
OSC
L1p 1mH
L2p 33μ
L3p 3μ9
L4p 3μ9
L5p 3μ9
L6p 10μ
IC1
IC3
IC4
IC2
IC7
P94
P95
P96
P97

DIAGRAM M MAIN POWER SUPPLY

Oscilloscope pictures for diagram M see page 2-5

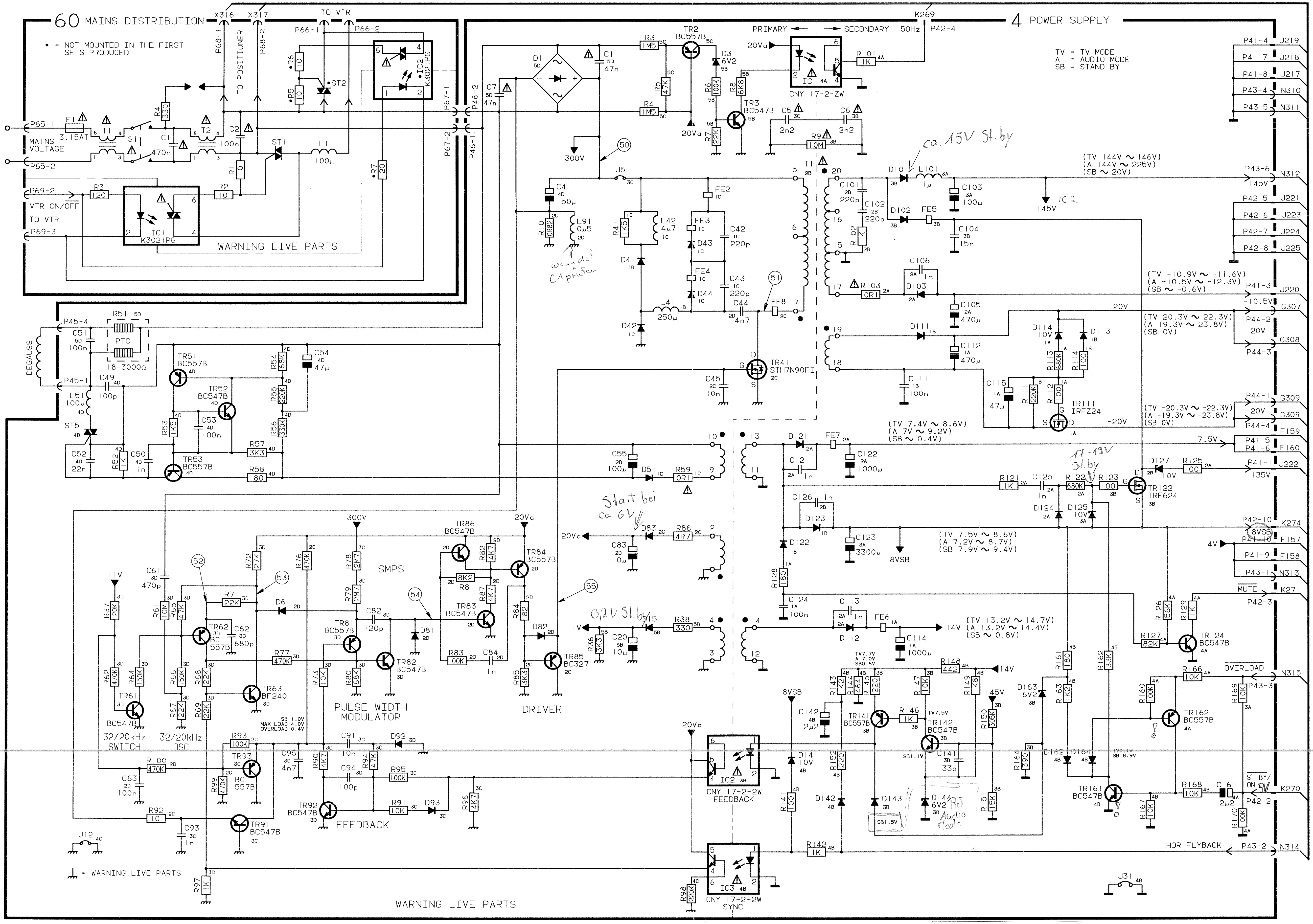

60 MAINS DISTRIBUTION
• = NOT MOUNTED IN THE FIRST SETS PRODUCED
X316
X317
TO VTR
P66-1
P66-2
P68-1
P68-2
TO POSITIONER
IC2 K3021PG
ST2
R6 10
R5 10
R4 330
P65-1
F1 3.15AT
T1
S1
C1 470n
T2
C2 100n
ST1
L1 100μ
MAINS VOLTAGE
P65-2
R1 10
R7 120
P67-1
P67-2
P46-2
P46-1
P69-2
R3 120
VTR ON/OFF
TO VTR
P69-3
IC1 K3021PG
R2 10
WARNING LIVE PARTS
C7 47n
D1
C1 47n
300V
(50)
R3 1M5
R4 1M5
TR2 BC557B
D3 6V2
R5 47K
R6 100K
R8 6K8
R7 22K
TR3 BC547B
20Va
PRIMARY
SECONDARY
50Hz
K269
P42-4
IC1 CNY 17-2-ZW
R101 1K
C5 2n2
C6 2n2
R9 10M
T1
4 POWER SUPPLY
TV = TV MODE
A = AUDIO MODE
SB = STAND BY
P41-4 J219
P41-7 J218
P41-8 J217
P43-4 N310
P43-5 N311
ca. 15V St. by
C4 150μ
J5
FE2
L42 4μ7
FE3
D43
C42 220p
R41 1K5
R10 0R82
L91 0μ5
wenn def. C1 prüfen
D41
FE4
D44
C43 220p
(51)
L41 250μ
C44 4n7
FE8
D42
TR41 STH7N90FI
C45 10n
C101 220p
C102 220p
R102 1K
D101
L101 1μ
C103 100μ
D102
FE5
C104 15n
145V
IC2
(TV 144V ~ 146V)
(A 144V ~ 225V)
(SB ~ 20V)
P43-6 N312
145V
P42-5 J221
P42-6 J223
P42-7 J224
P42-8 J225
C106 1n
D103
R103 0R1
C105 470μ
(TV -10.9V ~ -11.6V)
(A -10.5V ~ -12.3V)
(SB ~ -0.6V)
P41-3 J220
-10.5V
G307
20V
D111
C112 470μ
D114 10V
D113
(TV 20.3V ~ 22.3V)
(A 19.3V ~ 23.8V)
(SB 0V)
P44-2 G308
P44-3
C111 100n
C115 47μ
R111 220K
R113 680K
R114 100
R112 100K
TR111 IRFZ24
-20V
(TV -20.3V ~ -22.3V)
(A -19.3V ~ -23.8V)
(SB 0V)
P44-1 G309
P44-4 F159
DEGAUSS
P45-4
R51 PTC 18-3000Ω
C51 100n
P45-1
C49 100p
L51 100μ
ST51
C52 22n
R52 1K
C50 1n
TR51 BC557B
TR52 BC547B
C53 100n
R53 1K5
R54 68K
C54 47μ
R55 220K
R56 330K
R57 3K3
R58 180
TR53 BC557B
C55 100μ
D51
R59 0R1
(TV 7.4V ~ 8.6V)
(A 7V ~ 9.2V)
(SB ~ 0.4V)
D121
FE7
C121 1n
C122 1000μ
7.5V
P41-5 F160
P41-6
P41-1 J222
R121 1K
C125 1n
R122 680K
R123 100
17-19V St. by
D127 10V
R125 100
135V
TR122 IRF624
D124
D125 10V
Start bei ca 6V
C126 1n
D123
D83
R86 4R7
20Va
C83 10μ
C123 3300μ
8VSB
D122
(TV 7.5V ~ 8.6V)
(A 7.2V ~ 8.7V)
(SB 7.9V ~ 9.4V)
P42-10 K274
8VSB
P41-10 F157
14V
P41-9 F158
P43-1 N313
MUTE
P42-3 K271
R128 180
C124 100n
C113 1n
FE6
D112
C114 1000μ
14V
(TV 13.2V ~ 14.7V)
(A 13.2V ~ 14.4V)
(SB ~ 0.8V)
0,2V St. by
D15
R38 330
R36 3K3
C20 10μ
11V
R126 56K
R129 1K
R127 82K
TR124 BC547B
300V
20Va
TR86 BC547B
R82 4K7
TR84 BC557B
SMPS
R72 27K
R76 470K
R78 2M7
R79 2M7
(52)
(53)
(54)
(55)
11V
C61 470p
R71 22K
D61
R81 8K2
R87 4K7
TR83 BC547B
R84 82
C82 120p
D81
D82
TR81 BC557B
TR62 BC557
C62 680p
R37 20K
R61 10M
R65 47K
R77 470K
R83 100K
C84 1n
TR82 BC547B
TR85 BC327
R62 470K
R64 150K
R66 150K
R68 22K
R73 10K
R80 68K
R85 3K3
TR63 BF240
TR61 BC547B
R67 22K
R69 22K
32/20kHz SWITCH
32/20kHz OSC
PULSE WIDTH MODULATOR
DRIVER
SB 1.0V MAX LOAD 4.0V OVERLOAD 0.4V
R93 100K
R100 470K
C63 100n
TR93 BC557B
C95 4n7
R99 470K
R90 4K7
C91 10n
D92
C94 100p
R94 47K
R95 100K
R92 10
C93 1n
TR91 BC547B
TR92 BC547B
R91 10K
D93
R96 4K7
FEEDBACK
J12
= WARNING LIVE PARTS
R97 1K
WARNING LIVE PARTS
20Va
IC2 CNY 17-2-2W FEEDBACK
R98 220K
IC3 CNY 17-2-2W SYNC
8VSB
C142 2μ2
D141 10V
D142
R141 100
R142 1K
R143 1K2
R144 2K4
R145 220
TR141 BC557B
R146 1K
TR142 BC547B
R147 10K
R148 442
R149 1K8
R150 390K
145V
R152 220
C141 33p
D143
D144 6V2
SB1.5V
Ref Audio Mode
R151 15K
SB1.1V
TV7.7V A7.0V SB0.6V
R161 180
R162 33K
D163 6V2
R163 1K2
R164 390
D162
D164
TR161 BC547B
TV0.1V SB18.9V
R166 10K
OVERLOAD
N315
R160 100K
TR162 BC557B
R169 10K
P43-3
R167 10K
R168 10K
C161 2μ2
R170 100K
ST BY/ON 5V
P42-2 K270
HOR FLYBACK
P43-2 N314
J31

DIAGRAM N DEFLECTION & EHT

Oscilloscope pictures for diagram N see page 2-5

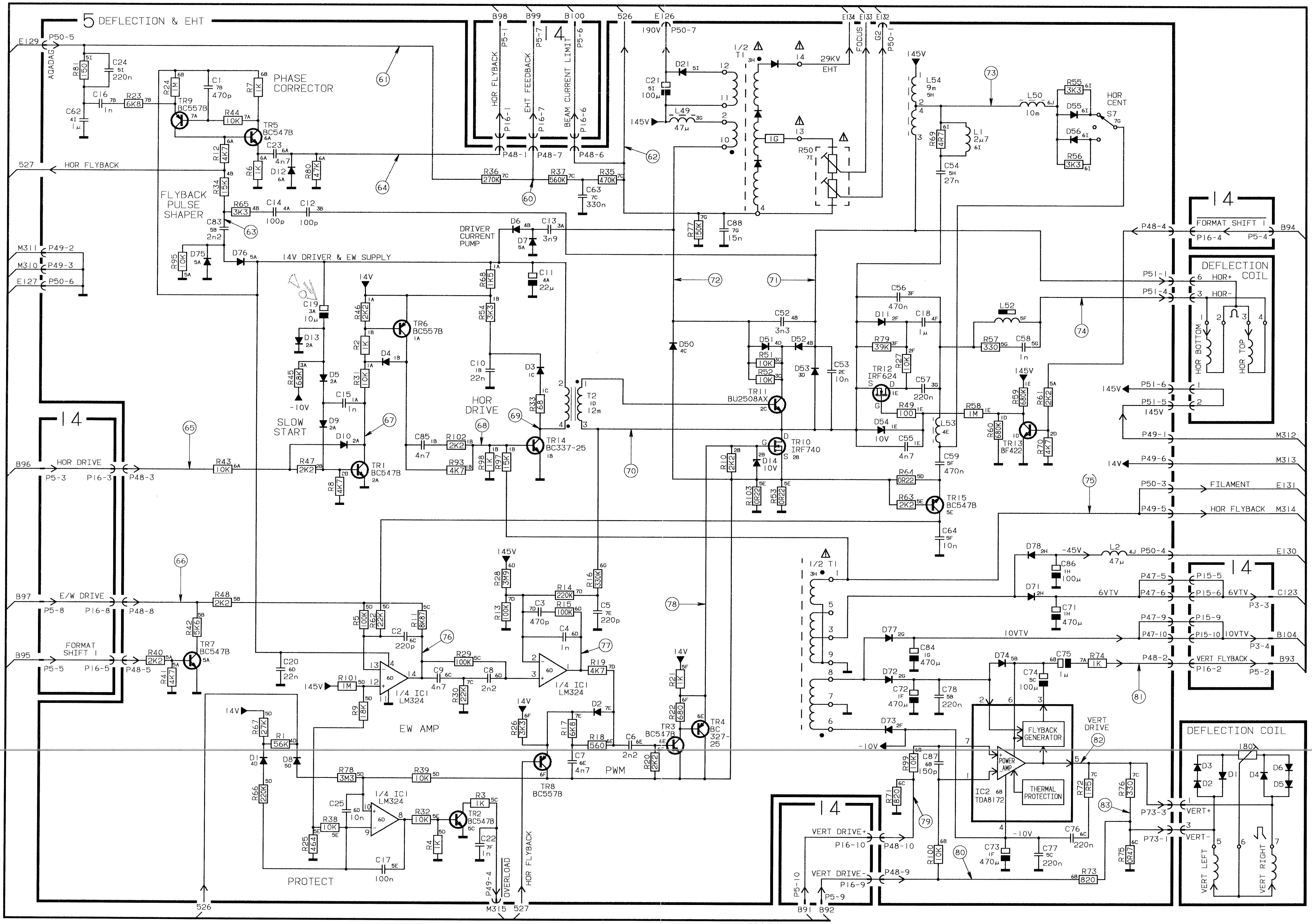

5 DEFLECTION & EHT
E129
P50-5
AQADAG
R81 150
C24 220n
C16 1n
R23 6K8
C62 1μ
R24 1M
TR9 BC557B
C1 470p
R44 10K
R7 1K
PHASE CORRECTOR
TR5 BC547B
C23 4n7
D12
R6 1K
R80 47K
R12 4K7
527
HOR FLYBACK
R34 15K
FLYBACK PULSE SHAPER
R65 3K3
C14 100p
C12 100p
C83 2n2
M311
P49-2
M310
P49-3
E127
P50-6
R95 10K
D75
D76
14V DRIVER & EW SUPPLY
61
64
60
62
63
R36 270K
R37 560K
R35 470K
C63 330n
B98
B99
B100
526
E126
190V
P50-7
14
HOR FLYBACK
EHT FEEDBACK
BEAM CURRENT LIMIT
P5-1
P5-7
P5-6
P16-1
P16-7
P16-6
P48-1
P48-7
P48-6
C21 100μ
D21
L49 47μ
145V
1/2 T1
12
11
2
10
14
13
29KV EHT
IG
R50
E134
E133
E132
FOCUS
G2
P50-1
R77 50K
C88 15n
DRIVER CURRENT PUMP
D6
C13 3n9
D7
R68 1K5
C11 22μ
C19 10μ
D13
R45 68K
-10V
D5
C15 1n
D9
D10
SLOW START
14V
R46 2K2
TR6 BC557B
R2 1K
D4
R31 10K
R54 3K3
C10 22n
D3
R33 68
HOR DRIVE
T2 12m
C85 4n7
R102 2K2
R93 4K7
R98 1K
R97 15K
TR14 BC337-25
65
67
68
69
70
B96
HOR DRIVE
P5-3
P16-3
P48-3
R43 10K
R47 2K2
TR1 BC547B
R8 4K7
D50
72
71
C52 3n3
D51
D52
R51 10K
R52 10K
D53
C53 10n
TR11 BU2508AX
TR10 IRF740
D14 10V
R10 2K2
R103 0R22
R53 0R22
145V
L54 9m
73
L50 10m
R55 3K3
D55
D56
R56 3K3
HOR CENT
S7
R69 4R7
L1 2μ7
C54 27n
C56 470n
D11
C18 1μ
L52
R79 39K
R27 10K
TR12 IRF624
C57 220n
R49 100
D54
10V
C55
L53
C59 470n
R57 330
C58 1n
74
145V
R58 1M
R59 680K
R60 680K
TR13 BF422
R61 2K2
R70 4K7
R64 0R22
R63 2K2
TR15 BC547B
C64 10n
14
FORMAT SHIFT 1
P48-4
P16-4
P5-4
B94
DEFLECTION COIL
P51-1
P51-4
HOR+
HOR-
HOR BOTTOM
HOR TOP
P51-6
P51-5
145V
P49-1
M312
P49-6
14V
M313
75
P50-3
FILAMENT
E131
P49-5
HOR FLYBACK
M314
D78
-45V
L2 47μ
P50-4
E130
C86 100μ
D71
6VTV
C71 470μ
P47-5
P47-6
P15-5
P15-6
6VTV
C123
P3-3
P47-9
P47-10
P15-9
P15-10
10VTV
B104
P3-4
D77
C84 470μ
D72
C72 470μ
C78 220n
D73
-10V
D74
C75 1μ
R74 1K
C74 100μ
P48-2
VERT FLYBACK
P16-2
P5-2
B93
81
FLYBACK GENERATOR
POWER AMP
THERMAL PROTECTION
IC2 TDA8172
VERT DRIVE
82
R99 10K
C87 150p
R71 820
79
R100 10K
80
C73 470μ
C77 220n
C76 220n
-10V
R72 1R5
R76 330
R75 0R47
R73 820
83
P73-3
P73-1
VERT+
VERT-
DEFLECTION COIL
180
D3
D2
D1
D4
D6
D5
VERT LEFT
VERT RIGHT
14
VERT DRIVE+
P16-10
P48-10
VERT DRIVE-
P16-9
P48-9
P5-10
P5-9
B91
B92
66
B97
E/W DRIVE
P5-8
P16-8
P48-8
R48 2K2
R42 5K6
TR7 BC547B
B95
FORMAT SHIFT 1
P5-5
P16-5
P48-5
R40 2K2
R41 4K7
C20 22n
R5 100K
R62 22K
R11 8K87
C2 220p
76
R101 1M
145V
R9 18K
1/4 IC1 LM324
C9 4n7
R29 100K
C8 2n2
R30 22K
EW AMP
145V
R28 3M9
R13 100K
R14 220K
C3 470p
R15 100K
C4 1n
R16 330K
C5 220p
1/4 IC1 LM324
77
78
R19 4K7
D2
R26 3K3
R17 6K8
R18 560
C7 4n7
C6 2n2
PWM
TR8 BC557B
R22 680
R21 1K
14V
TR3 BC547B
TR4 BC327-25
R20 2K2
14V
R67 27K
R1 56K
D1
D8
R66 220K
R78 3M3
R39 10K
1/4 IC1 LM324
C25 10n
R38 10K
R25 464
R32 10K
TR2 BC547B
R3 1K
R4 1K
C22 1n
C17 100n
PROTECT
526
P49-4
OVERLOAD
HOR FLYBACK
M315
527

DIAGRAM O MAIN MICROCOMPUTER

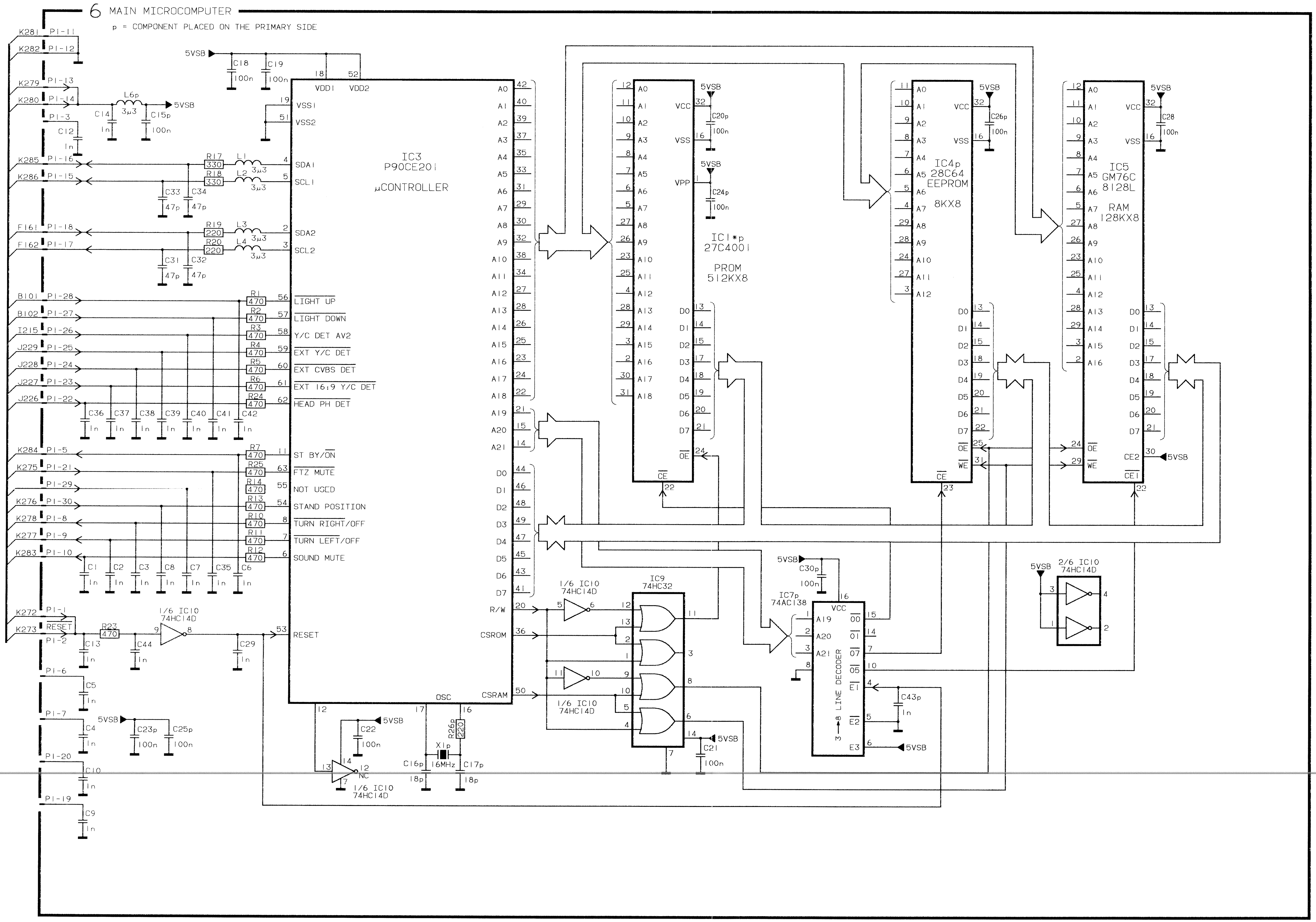
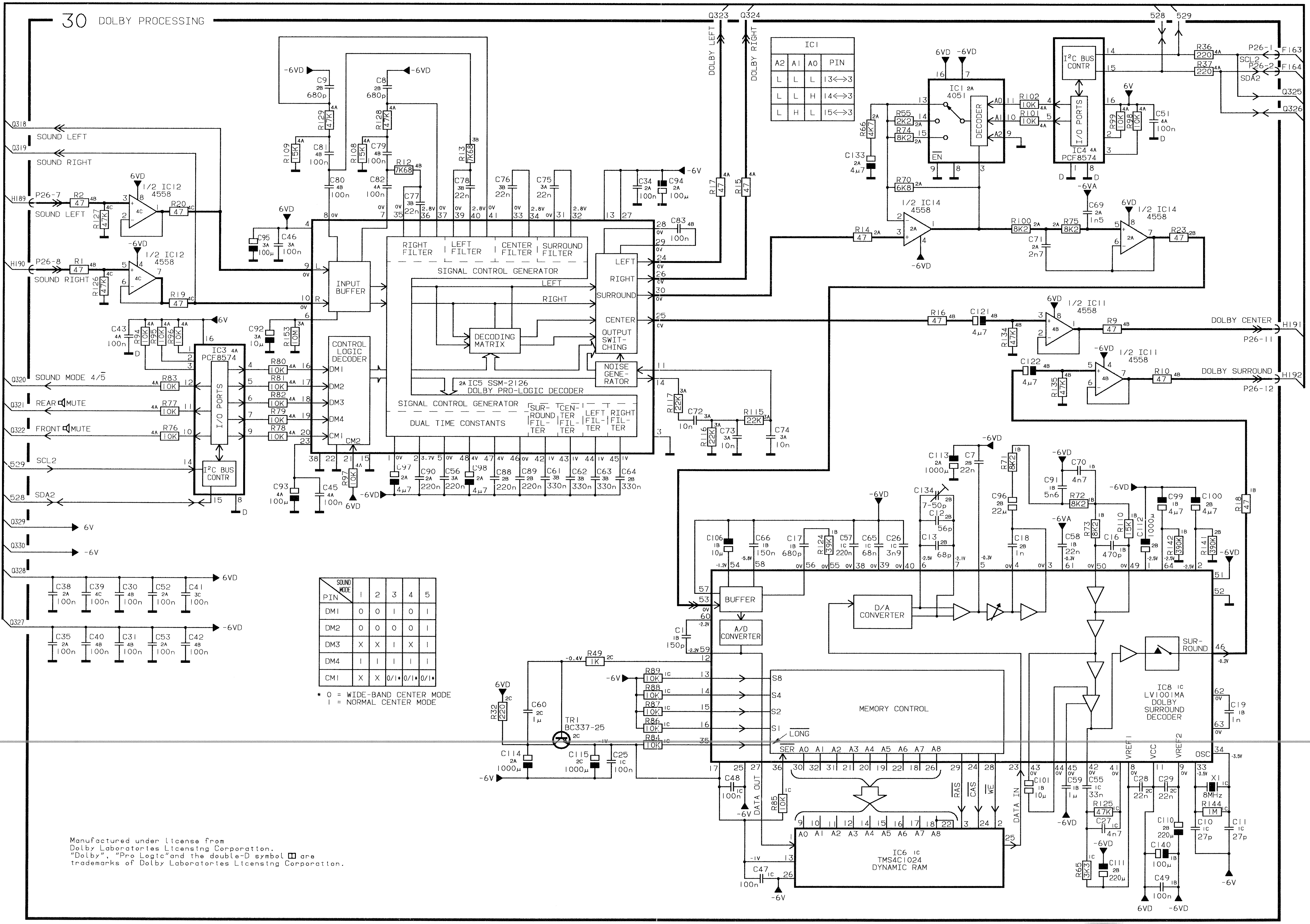

6 MAIN MICROCOMPUTER
p = COMPONENT PLACED ON THE PRIMARY SIDE
K281 P1-11
K282 P1-12
K279 P1-13
K280 P1-14
P1-3
L6p 3µ3
C14 1n
C15p 100n
C12 1n
5VSB
C18 100n
C19 100n
K285 P1-16
K286 P1-15
R17 330
R18 330
L1 3µ3
L2 3µ3
C33 47p
C34 47p
F161 P1-18
F162 P1-17
R19 220
R20 220
L3 3µ3
L4 3µ3
C31 47p
C32 47p
B101 P1-28
B102 P1-27
I215 P1-26
J229 P1-25
J228 P1-24
J227 P1-23
J226 P1-22
R1 470
R2 470
R3 470
R4 470
R5 470
R6 470
R24 470
C36 1n
C37 1n
C38 1n
C39 1n
C40 1n
C41 1n
C42 1n
K284 P1-5
K275 P1-21
P1-29
K276 P1-30
K278 P1-8
K277 P1-9
K283 P1-10
R7 470
R25 470
R14 470
R13 470
R10 470
R11 470
R12 470
C1 1n
C2 1n
C3 1n
C8 1n
C7 1n
C35 1n
C6 1n
K272 P1-1
K273 RESET
P1-2
R23 470
C13 1n
C44 1n
1/6 IC10 74HC14D
C29 1n
P1-6
C5 1n
P1-7
C4 1n
5VSB
C23p 100n
C25p 100n
P1-20
C10 1n
P1-19
C9 1n
IC3
P90CE201
µCONTROLLER
VDD1
VDD2
VSS1
VSS2
SDA1
SCL1
SDA2
SCL2
LIGHT UP
LIGHT DOWN
Y/C DET AV2
EXT Y/C DET
EXT CVBS DET
EXT 16:9 Y/C DET
HEAD PH DET
ST BY/ON
FTZ MUTE
NOT USED
STAND POSITION
TURN RIGHT/OFF
TURN LEFT/OFF
SOUND MUTE
RESET
OSC
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20 A21
D0 D1 D2 D3 D4 D5 D6 D7
R/W
CSROM
CSRAM
C22 100n
X1p 16MHz
R26p 220
C16p 18p
C17p 18p
1/6 IC10 74HC14D
NC
IC1*p
27C4001
PROM
512KX8
VCC
VSS
VPP
C20p 100n
C24p 100n
OE
CE
IC4p
28C64
EEPROM
8KX8
C26p 100n
WE
IC5
GM76C
8128L
RAM
128KX8
C28 100n
CE2
CE1
IC9
74HC32
C21 100n
IC7p
74AC138
A19
A20
A21
3→8 LINE DECODER
C30p 100n
C43p 1n
E1
E2
E3
2/6 IC10
74HC14D

DIAGRAM P DOLBY PROCESSING **PCB drawings for PCB30 see page 2-35**


30 DOLBY PROCESSING
Q323
Q324
DOLBY LEFT
DOLBY RIGHT
528
529
P26-1
P26-2
F163
F164
SCL2
SDA2
Q325
Q326
Q318
SOUND LEFT
Q319
SOUND RIGHT
H189
P26-7
SOUND LEFT
H190
P26-8
SOUND RIGHT
1/2 IC12
4558
Q320
SOUND MODE 4/5
Q321
REAR MUTE
Q322
FRONT MUTE
529
SCL2
528
SDA2
Q329
6V
Q330
-6V
Q328
6VD
Q327
-6VD
IC3
PCF8574
I/O PORTS
I²C BUS CONTR
IC5 SSM-2126
DOLBY PRO-LOGIC DECODER
INPUT BUFFER
CONTROL LOGIC DECODER
RIGHT FILTER
LEFT FILTER
CENTER FILTER
SURROUND FILTER
SIGNAL CONTROL GENERATOR
LEFT
RIGHT
SURROUND
CENTER
OUTPUT SWITCHING
DECODING MATRIX
NOISE GENERATOR
DUAL TIME CONSTANTS
SURROUND FILTER
CENTER FILTER
LEFT FILTER
RIGHT FILTER
IC1
4051
DECODER
EN
I²C BUS CONTR
I/O PORTS
IC4
PCF8574
1/2 IC14
4558
1/2 IC11
4558
DOLBY CENTER
P26-11
H191
DOLBY SURROUND
P26-12
H192
IC8
LV1001MA
DOLBY SURROUND DECODER
BUFFER
A/D CONVERTER
D/A CONVERTER
SURROUND
MEMORY CONTROL
S8
S4
S2
S1
LONG
SER
VREF1
VCC
VREF2
OSC
DATA OUT
DATA IN
RAS
CAS
WE
IC6
TMS4C1024
DYNAMIC RAM
TR1
BC337-25
X1
8MHz
6VD
-6VD

IC1			
A2	A1	A0	PIN
L	L	L	13<——>3
L	L	H	14<——>3
L	H	L	15<——>3

PIN \ SOUND MODE	1	2	3	4	5
DM1	0	0	1	0	1
DM2	0	0	0	0	1
DM3	X	X	1	X	1
DM4	1	1	1	1	1
CM1	X	X	0/1*	0/1*	0/1*

* 0 = WIDE-BAND CENTER MODE
1 = NORMAL CENTER MODE

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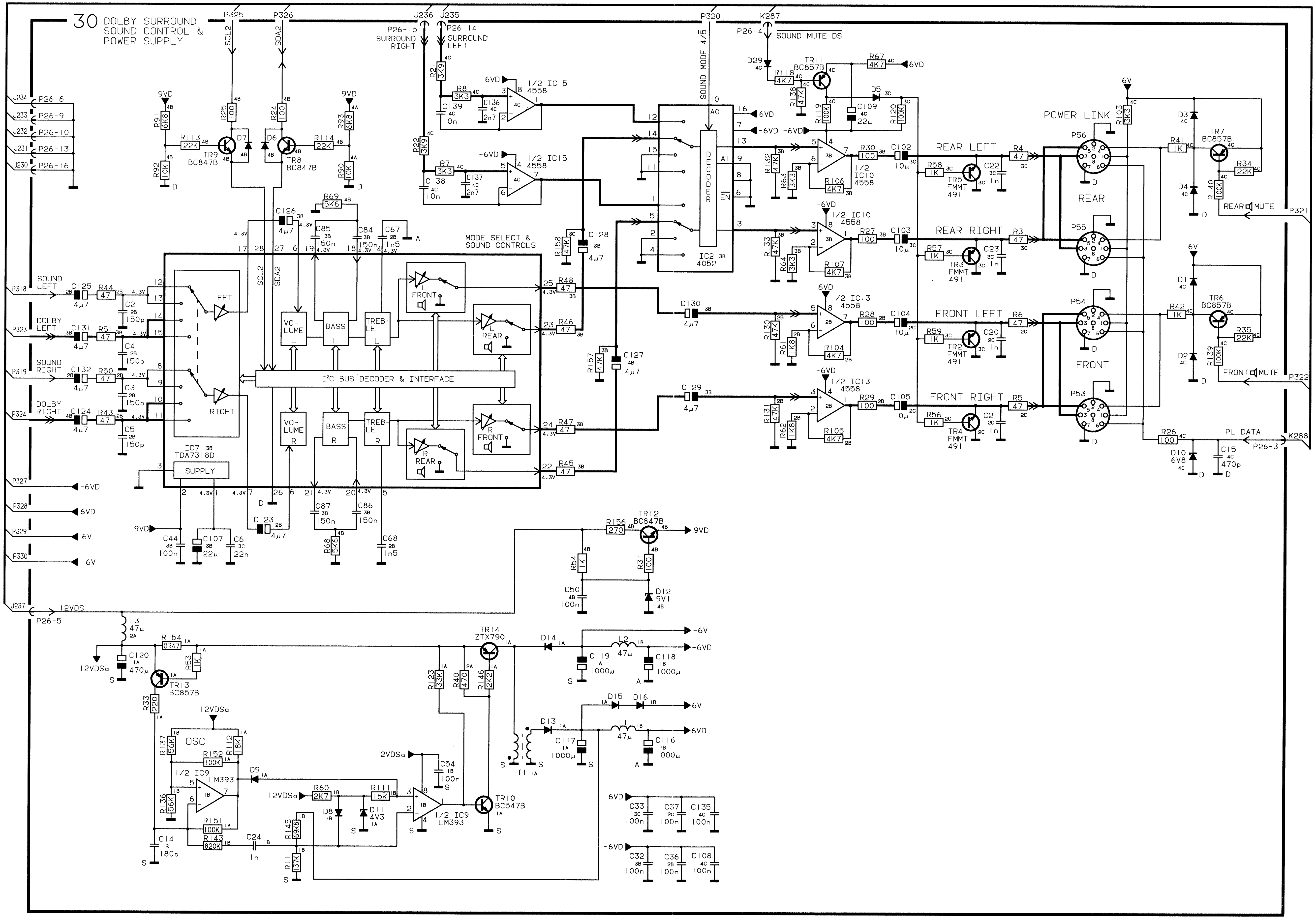
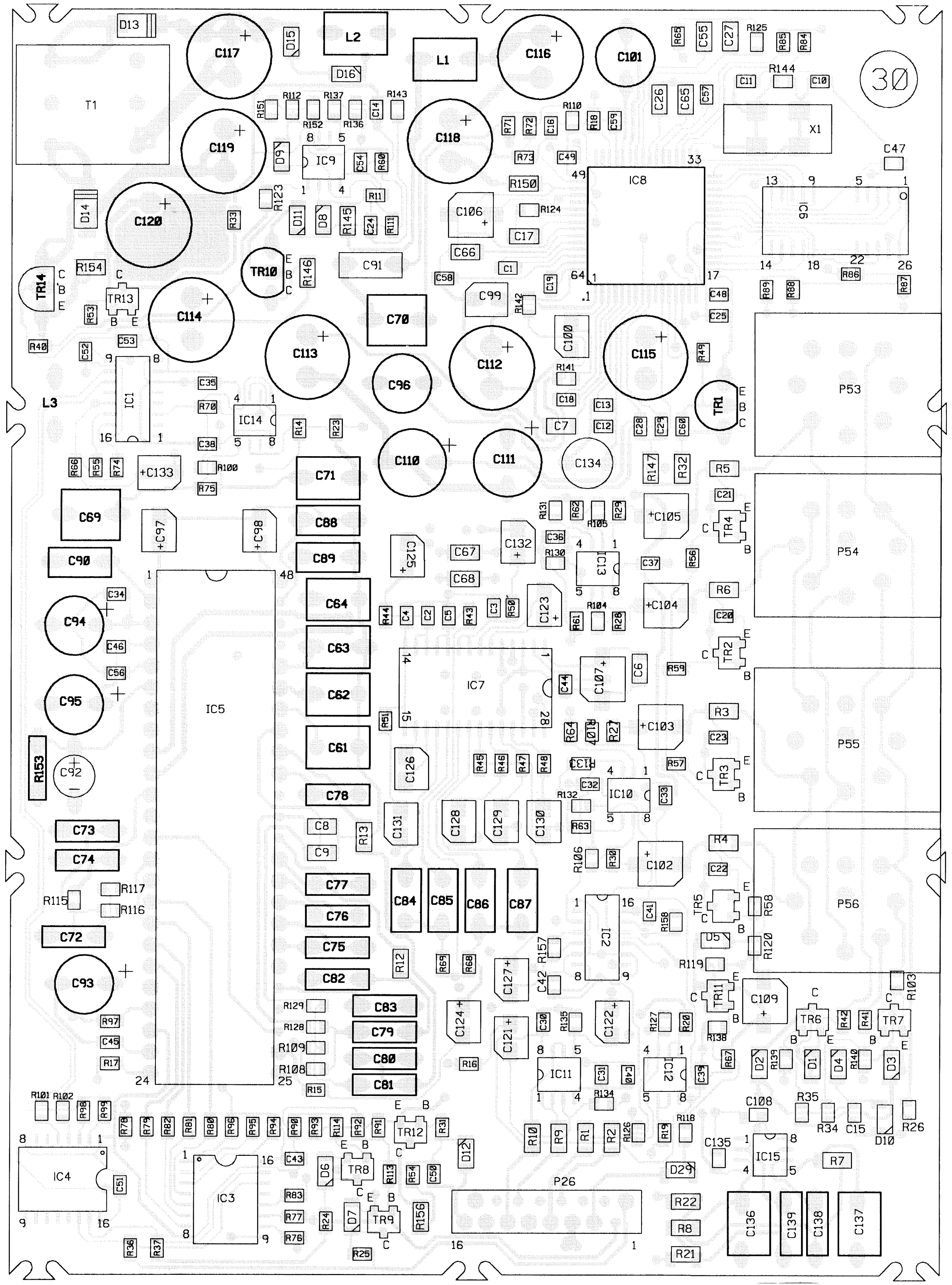
DIAGRAM Q DOLBY SURROUND CONTROL & POWER SUPPLY **PCB drawings for PCB30 see page 2-35**


30 DOLBY SURROUND SOUND CONTROL & POWER SUPPLY
P325
P326
J236
J235
P320
K287
P26-15 SURROUND RIGHT
P26-14 SURROUND LEFT
P26-4
SOUND MUTE DS
SOUND MODE 4/5
SCL2
SDA2
J234 P26-6
J233 P26-9
J232 P26-10
J231 P26-13
J230 P26-16
9VD
R91 6K8
R92 10K
R113 22K
TR9 BC847B
R25 100
D7
R24 100
D6
TR8 BC847B
R114 22K
R93 6K8
R90 10K
R21 3K9
R8 3K3
C139 10n
C136 2n7
1/2 IC15 4558
R22 3K9
R7 3K3
C138 10n
C137 2n7
1/2 IC15 4558
6VD
-6VD
D29
R118 4K7
TR11 BC857B
R67 4K7
R138 47K
R119 100K
C109 22µ
D5
R120 100K
6V
R103 3K3
POWER LINK
D3
TR7 BC857B
R41 1K
R34 22K
D4
R140 100K
REAR MUTE
P321
P56
REAR
P55
P54
FRONT
P53
IC2 4052
DECODER
A0
A1
EN
R30 100
C102 10µ
REAR LEFT
R4 47
R58 1K
TR5 FMMT 491
C22 1n
R132 47K
R63 3K3
R106 4K7
1/2 IC10 4558
R27 100
C103 10µ
REAR RIGHT
R3 47
R57 1K
TR3 FMMT 491
C23 1n
R133 47K
R64 3K3
R107 4K7
R158 47K
C128 4µ7
C126 4µ7
R69 5K6
C85 150n
C84 150n
C67 1n5
MODE SELECT & SOUND CONTROLS
C130 4µ7
1/2 IC13 4558
R28 100
C104 10µ
FRONT LEFT
R6 47
R59 1K
TR2 FMMT 491
C20 1n
R130 47K
R61 1K8
R104 4K7
6V
D1
TR6 BC857B
R42 1K
R35 22K
D2
R139 100K
FRONT MUTE
P322
C129 4µ7
R29 100
C105 10µ
FRONT RIGHT
R5 47
R56 1K
TR4 FMMT 491
C21 1n
R131 47K
R62 1K8
R105 4K7
R26 100
PL DATA
K288
P26-3
D10 6V8
C15 470p
P318 SOUND LEFT
C125 4µ7
R44 47
C2 150p
P323 DOLBY LEFT
C131 4µ7
R51 47
C4 150p
P319 SOUND RIGHT
C132 4µ7
R50 47
C3 150p
P324 DOLBY RIGHT
C124 4µ7
R43 47
C5 150p
LEFT
RIGHT
VO-LUME L
BASS L
TREB-LE L
VO-LUME R
BASS R
TREB-LE R
I²C BUS DECODER & INTERFACE
L FRONT
REAR
R FRONT
R REAR
IC7 TDA7318D
SUPPLY
R48 47
R46 47
R47 47
R45 47
R157 47K
C127 4µ7
P327 -6VD
P328 6VD
P329 6V
P330 -6V
9VD
C44 100n
C107 22µ
C6 22n
C123 4µ7
C87 150n
C86 150n
R68 5K6
C68 1n5
R156 270
TR12 BC847B
9VD
R54 1K
R31 100
C50 100n
D12 9V1
J237 12VDS
P26-5
L3 47µ
R154 0R47
12VDSa
C120 470µ
R53 1K
TR13 BC857B
R33 220
TR14 ZTX790
R123 33K
R40 470
R146 2K2
D14
L2 47µ
C119 1000µ
C118 1000µ
-6V
-6VD
D15
D16
6V
D13
L1 47µ
C117 1000µ
C116 1000µ
6VD
T1
12VDSa
R137 56K
OSC
R112 18K
R152 100K
1/2 IC9 LM393
D9
R136 56K
R151 100K
R143 820K
C14 180p
C24 1n
R60 2K7
R111 15K
D8
D11 4V3
R145 69K8
R11 37K
C54 100n
1/2 IC9 LM393
TR10 BC547B
6VD
C33 100n
C37 100n
C135 100n
-6VD
C32 100n
C36 100n
C108 100n

PCB 30



PCB 20

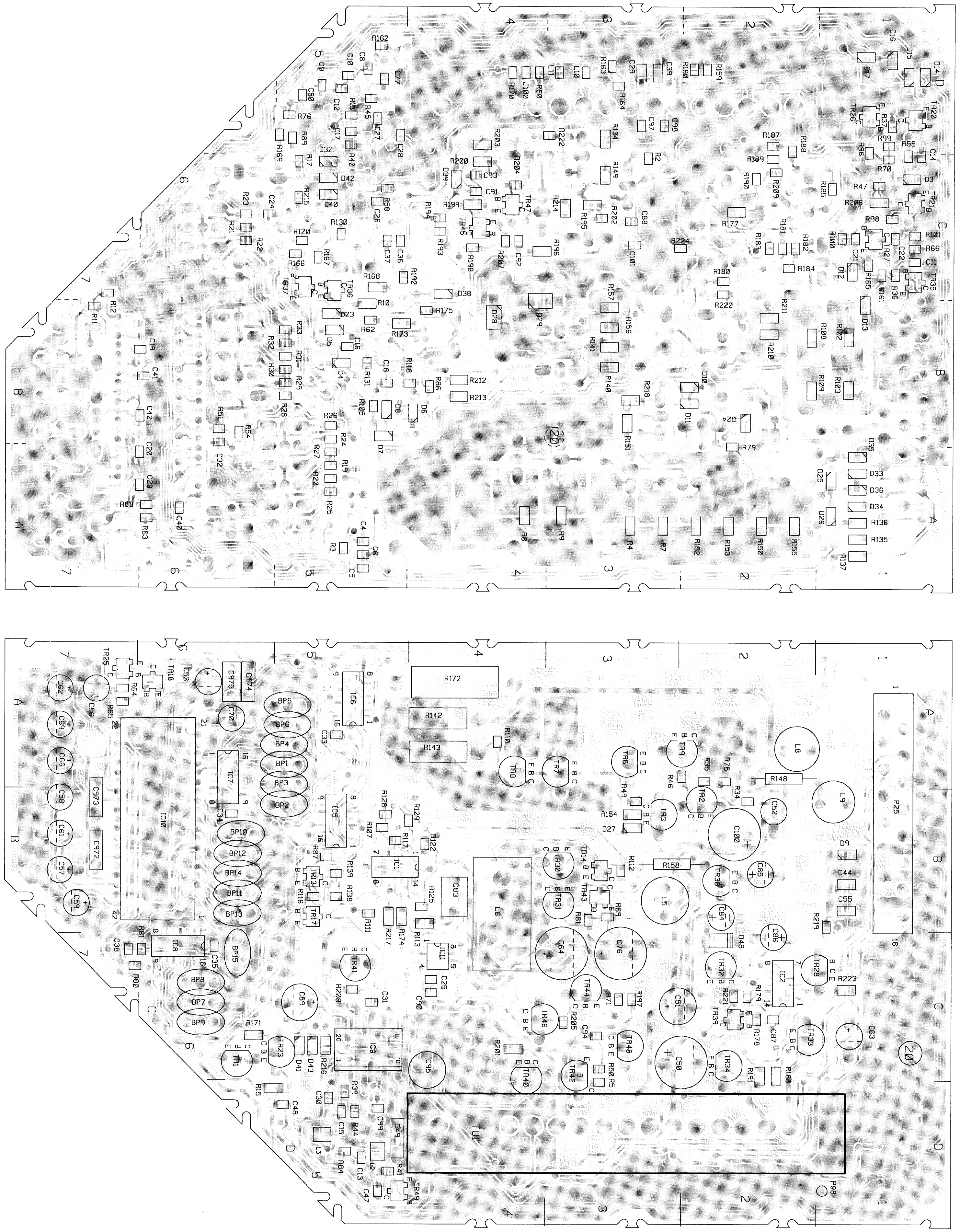


DIAGRAM R SATELLITE VIDEO PROCESSING

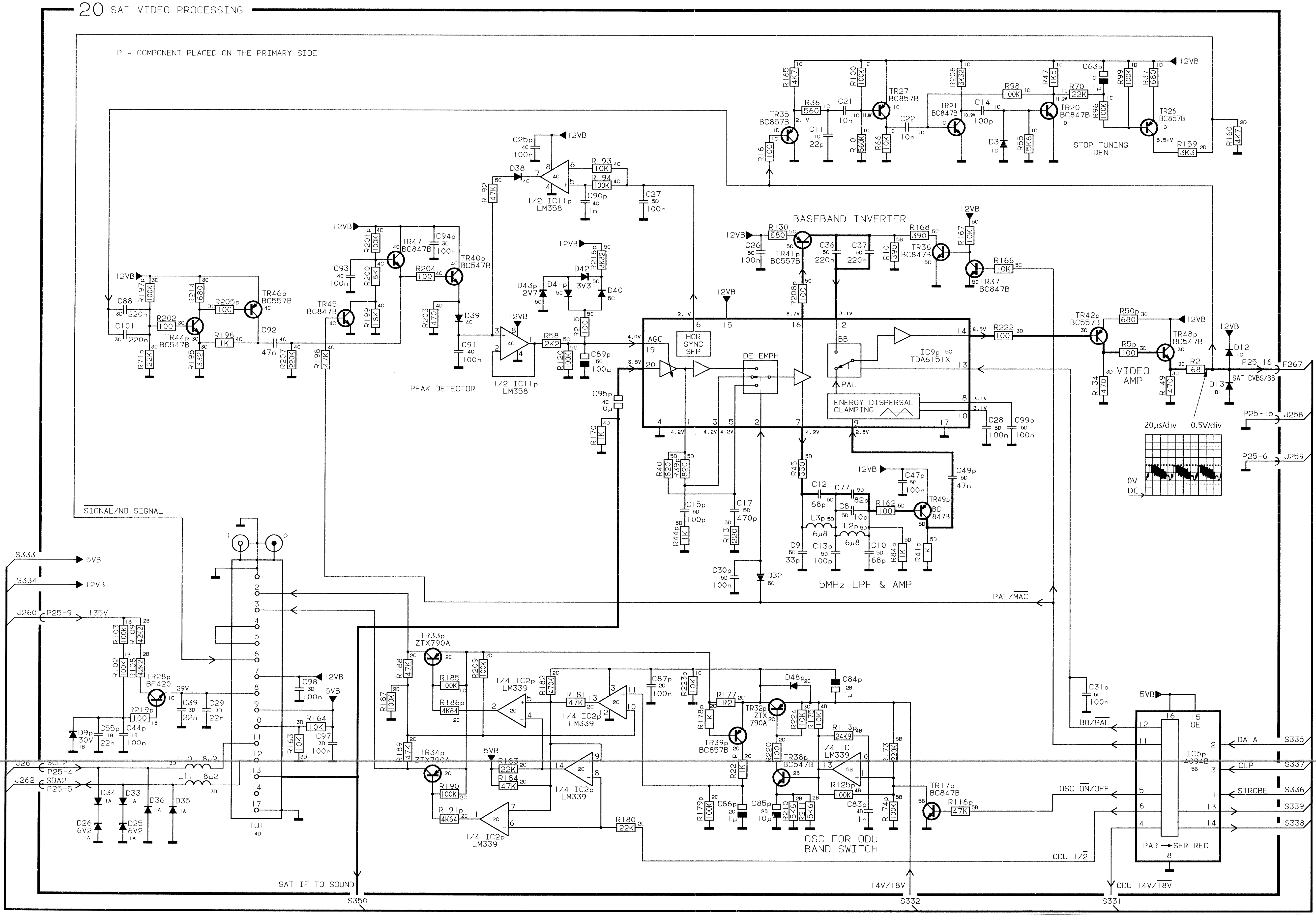
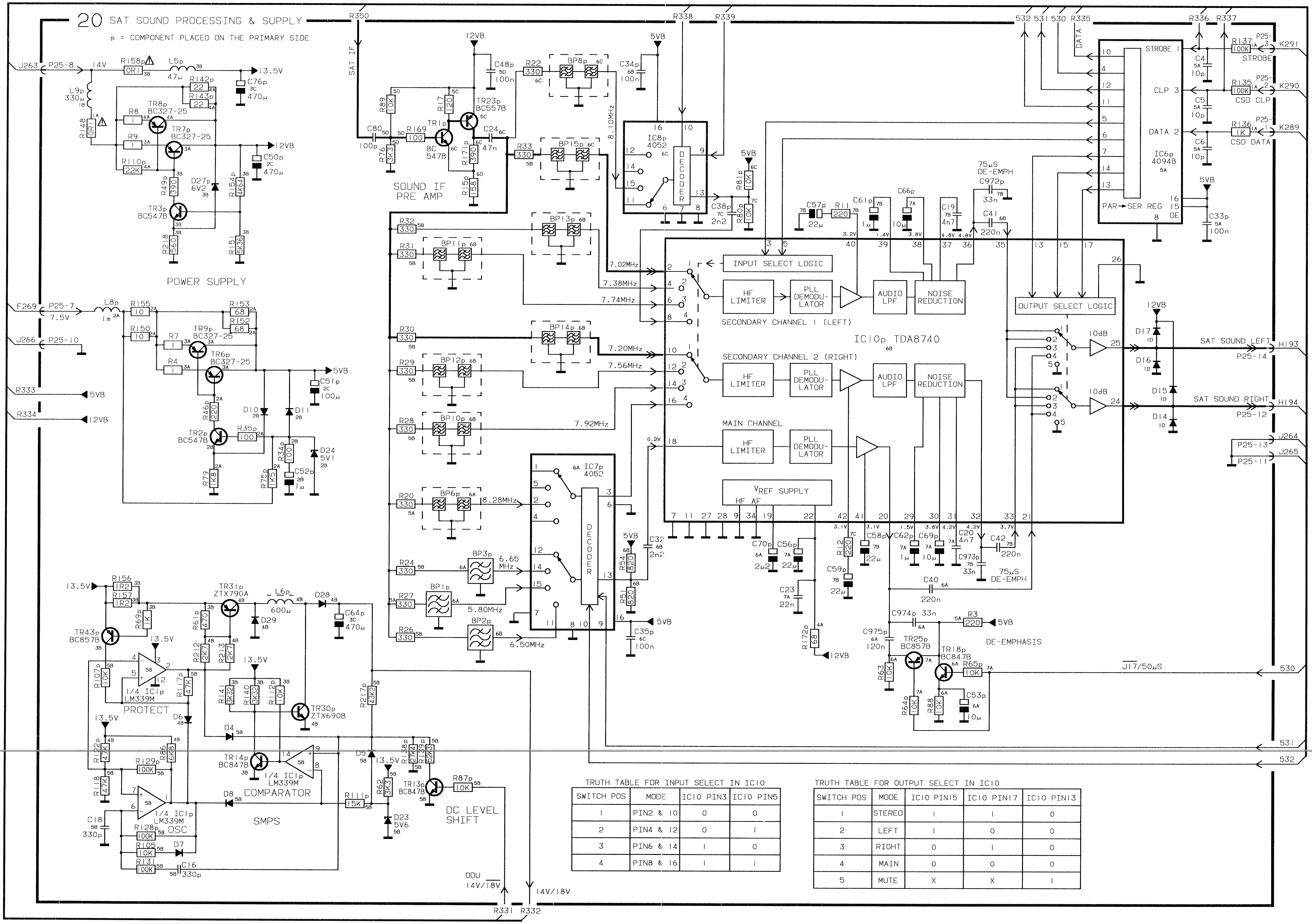

20 SAT VIDEO PROCESSING
P = COMPONENT PLACED ON THE PRIMARY SIDE
12VB
5VB
R165 4K7
R36 560
C21 10n
R100 100K
TR27 BC857B
TR35 BC857B
C11 22p
R161 100
R101 560K
R66 10K
C22 10n
R206 3K32
TR21 BC847B
C14 100p
D3
R55 5K6
R98 100K
R47 1K5
R70 22K
C63p 1µ
TR20 BC847B
R96 100K
R99 100K
R37 680
TR26 BC857B
R159 3K3
R160 4K7
STOP TUNING IDENT
C25p 100n
D38
1/2 IC11p LM358
R193 10K
R194 10K
C90p 1n
C27 100n
R192 47K
12VB
R201p 100K
TR47 BC847B
C94p 100n
TR40p BC547B
C93 100n
R200 18K
R204 100
R199 18K
TR45 BC847B
R203 470
D39
C91 100n
R197p 100K
R214 680
R205p 100
TR46p BC557B
C88 220n
C101 220n
R202 100
TR44p BC547B
R196 1K
C92 47n
R71p 22K
R195 332
R207 220K
R198 47K
D43p 2V7
D41p
D42 3V3
D40
R216p 3K32
R215 100
R58 2K2
1/2 IC11p LM358
PEAK DETECTOR
R120 100K
C89p 100µ
C95p 10µ
R170 1K
BASEBAND INVERTER
R130 680
C26 100n
TR41p BC557B
C36 220n
C37 220n
R10 390
R168 390
TR36 BC847B
R167 10K
R166 10K
TR37 BC847B
R208p 100
AGC
HOR SYNC SEP
DE EMPH
BB
PAL
IC9p TDA6151X
ENERGY DISPERSAL CLAMPING
R222 100
C28 100n
C99p 100n
R40 820
R39p 820
C15p 100p
R44p 1K
C17 470p
R13 220
C30p 100n
D32
R45 330
C12 68p
C77 82p
C8 10p
L3p 6µ8
L2p 6µ8
C9 33p
C13p 100p
C10 68p
R162 100
C47p 100n
TR49p BC847B
C49p 47n
R84p 1K
R41p 1K
5MHz LPF & AMP
TR42p BC557B
R50p 680
R5p 100
TR48p BC547B
R134 470
VIDEO AMP
R149 470
R2 68
D12
D13
P25-16
F267
SAT CVBS/BB
20µs/div 0.5V/div
0V DC
P25-15
J258
P25-6
J259
SIGNAL/NO SIGNAL
PAL/MAC
S333
5VB
S334
12VB
J260
P25-9
135V
R103 100K
R104 100K
R105 22K
R102 100K
R106 22K
TR28p BF420
29V
R219p 100
C39 22n
C29 22n
D9p 30V
C55p 22n
C44p 100n
J261
SCL2 P25-4
J262
SDA2 P25-5
L10 8µ2
L11 8µ2
D34
D33
D36
D35
D26 6V2
D25 6V2
TU1
C98 100n
R164 10K
R163 10K
C97 100n
TR33p ZTX790A
R188 47K
R187 100K
R185 100K
R186p 4K64
R209 100K
1/4 IC2p LM339
R182 470K
R181 47K
1/4 IC2p LM339
C87p 100n
R189 47K
TR34p ZTX790A
R190 100K
R191p 4K64
R183 22K
R184 47K
1/4 IC2p LM339
1/4 IC2p LM339
R180 22K
R223p 100K
R177 1R2
D48p
C84p 1µ
TR32p ZTX790A
TR39p BC857B
R224 10K
R175 10K
R113p 24K9
1/4 IC1 LM339
R178p 1K
R22 1K
R220 100
TR38p BC547B
R125p 100K
C83p 1n
R173 220K
R179p 100K
C86p 1µ
C85p 10µ
R210 5K6
R211 5K6
R174p 100K
TR17p BC847B
R116p 47K
OSC FOR ODU BAND SWITCH
C31p 100n
BB/PAL
OSC ON/OFF
ODU 1/2
IC5p 4094B
PAR → SER REG
OE
DATA
S335
CLP
S337
STROBE
S336
S339
S338
SAT IF TO SOUND
S350
14V/18V
S332
ODU 14V/18V
S331

DIAGRAM S SATELLITE SOUND PROCESSING & POWER SUPPLY


20 SAT SOUND PROCESSING & SUPPLY
p = COMPONENT PLACED ON THE PRIMARY SIDE
POWER SUPPLY
SOUND IF PRE AMP
SAT IF
IC8p 4052
DECODER
IC7p 4052
IC6p 4094B
PAR→SER REG
STROBE
CLP
DATA
IC10p TDA8740
INPUT SELECT LOGIC
HF LIMITER
PLL DEMODULATOR
AUDIO LPF
NOISE REDUCTION
SECONDARY CHANNEL 1 (LEFT)
SECONDARY CHANNEL 2 (RIGHT)
MAIN CHANNEL
VREF SUPPLY
OUTPUT SELECT LOGIC
10dB
SAT SOUND LEFT
SAT SOUND RIGHT
75µS DE-EMPH
DE-EMPHASIS
J17/50µS
7.02MHz
7.38MHz
7.74MHz
7.20MHz
7.56MHz
7.92MHz
8.28MHz
6.65 MHz
5.80MHz
6.50MHz
8.10MHz
PROTECT
1/4 IC1p LM339M
COMPARATOR
SMPS
OSC
DC LEVEL SHIFT
ODU 14V/18V
14V/18V
13.5V
12VB
5VB
J263
J266
F269
K291
K290
K289
H193
H194
J264
J265
R331
R332
R350
R338
R339
R336
R337
532
531
530
R335

TRUTH TABLE FOR INPUT SELECT IN IC10

SWITCH POS	MODE	IC10 PIN3	IC10 PIN5
1	PIN2 & 10	0	0
2	PIN4 & 12	0	1
3	PIN6 & 14	1	0
4	PIN8 & 16	1	1

TRUTH TABLE FOR OUTPUT SELECT IN IC10

SWITCH POS	MODE	IC10 PIN15	IC10 PIN17	IC10 PIN13
1	STEREO	1	1	0
2	LEFT	1	0	0
3	RIGHT	0	1	0
4	MAIN	0	0	0
5	MUTE	X	X	1

DIAGRAM T CAMCORDER INTERFACE & HEADPHONE

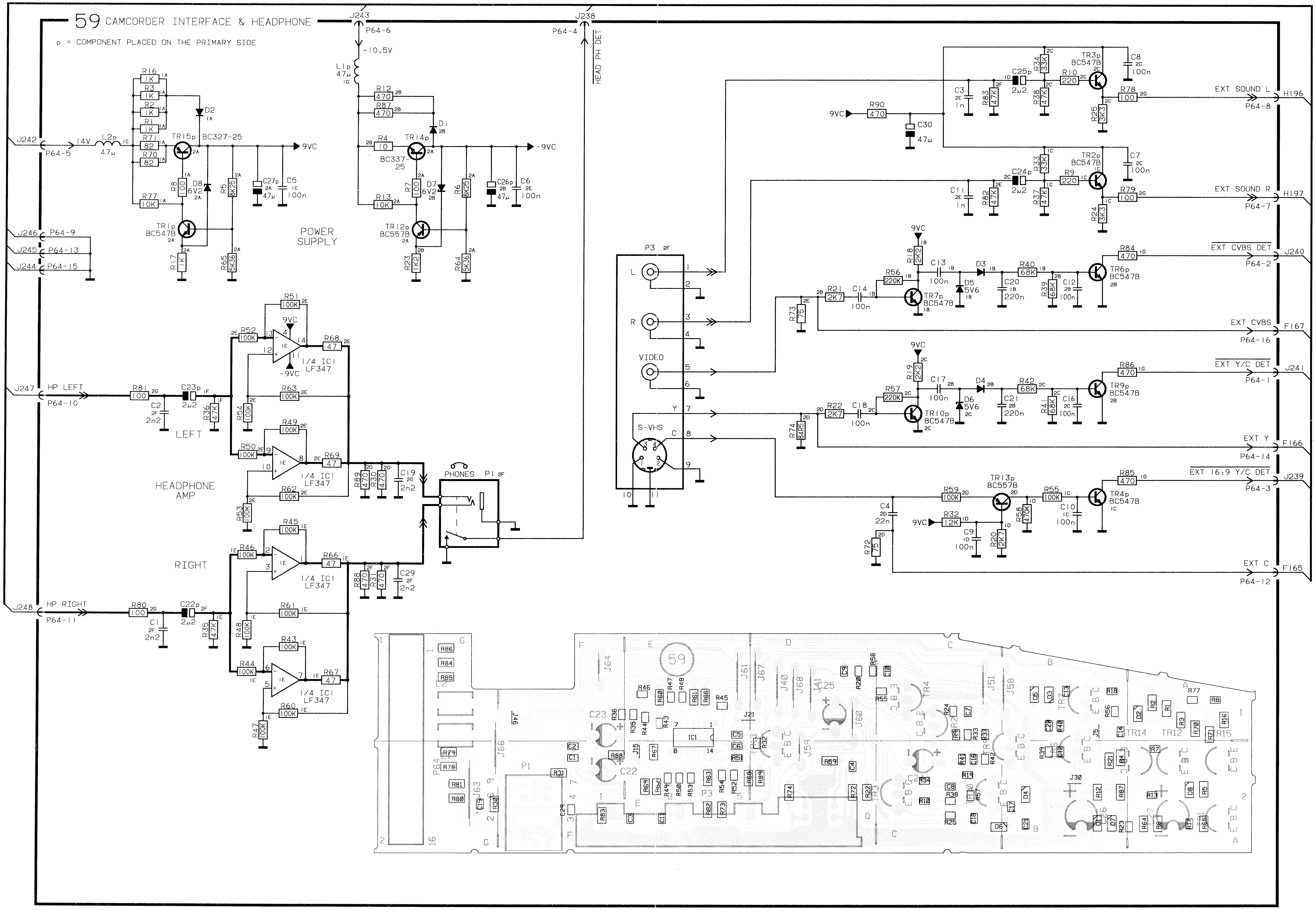
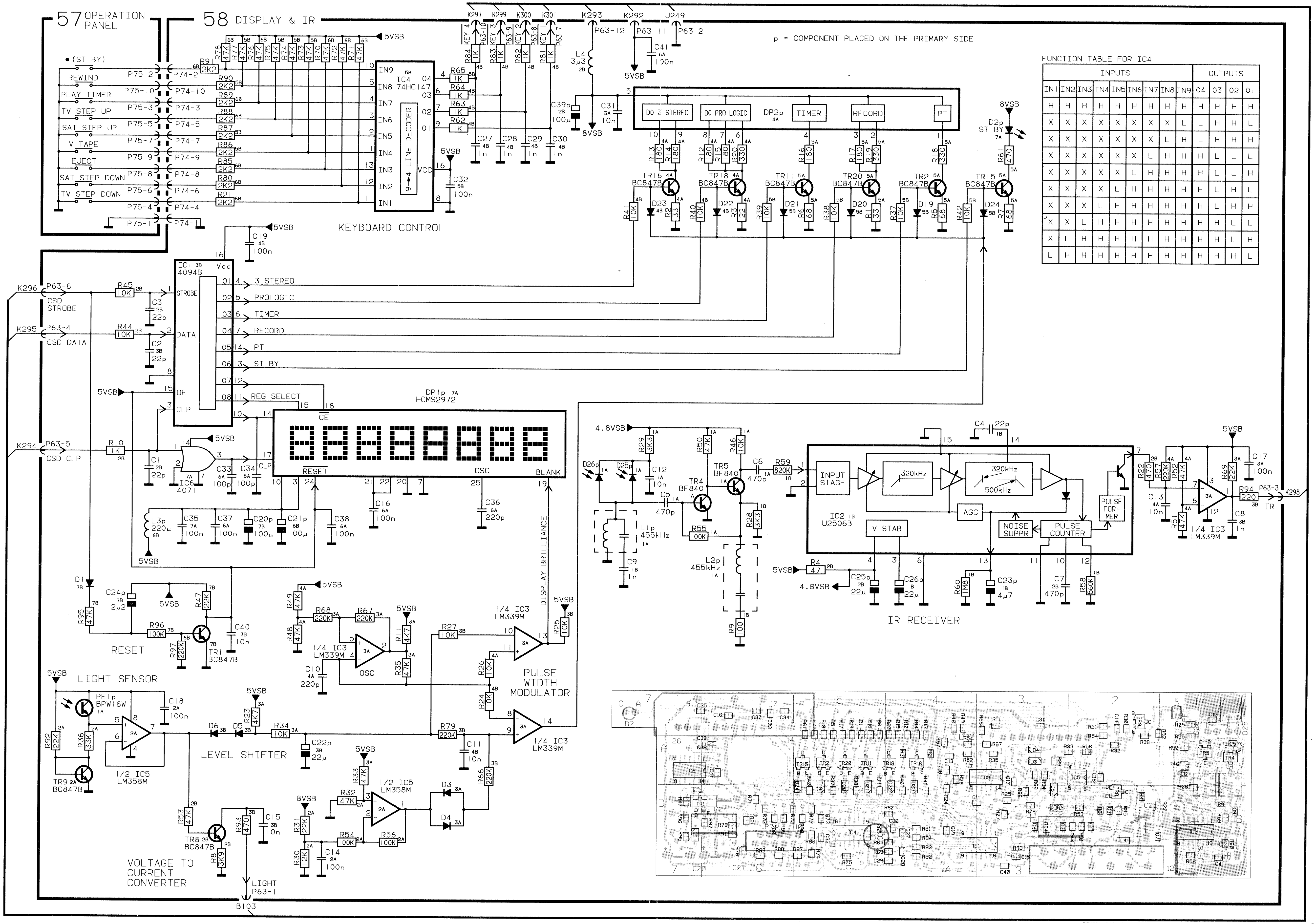

59 CAMCORDER INTERFACE & HEADPHONE
p = COMPONENT PLACED ON THE PRIMARY SIDE
J243
P64-6
-10.5V
J238
P64-4
HEAD PH DET
J242
P64-5
14V
L2p 47µ
L1p 47µ
TR15p BC327-25
TR14p BC337-25
TR1p BC547B
TR12p BC557B
9VC
-9VC
POWER SUPPLY
D2
D1
D8 6V2
D7 6V2
C27p 47µ
C5 100n
C26p 47µ
C6 100n
J246 P64-9
J245 P64-13
J244 P64-15
J247 HP LEFT P64-10
J248 HP RIGHT P64-11
C23p 2µ2
C22p 2µ2
LEFT
RIGHT
HEADPHONE AMP
1/4 IC1 LF347
PHONES P1
C19 2n2
C29 2n2
C2 2n2
C1 2n2
P3
L
R
VIDEO
S-VHS
Y
C
9VC
R90 470
C30 47µ
TR3p BC547B
TR2p BC547B
C25p 2µ2
C24p 2µ2
C8 100n
C7 100n
C3 1n
C11 1n
EXT SOUND L
H196
P64-8
EXT SOUND R
H197
P64-7
TR7p BC547B
TR6p BC547B
D3
D5 5V6
C13 100n
C14 100n
C20 220n
C12 100n
EXT CVBS DET
J240
P64-2
EXT CVBS
F167
P64-16
TR10p BC547B
TR9p BC547B
D4
D6 5V6
C17 100n
C18 100n
C21 220n
C16 100n
EXT Y/C DET
J241
P64-1
EXT Y
F166
P64-14
TR13p BC557B
TR4p BC547B
C4 22n
C9 100n
C10 100n
EXT 16:9 Y/C DET
J239
P64-3
EXT C
F165
P64-12

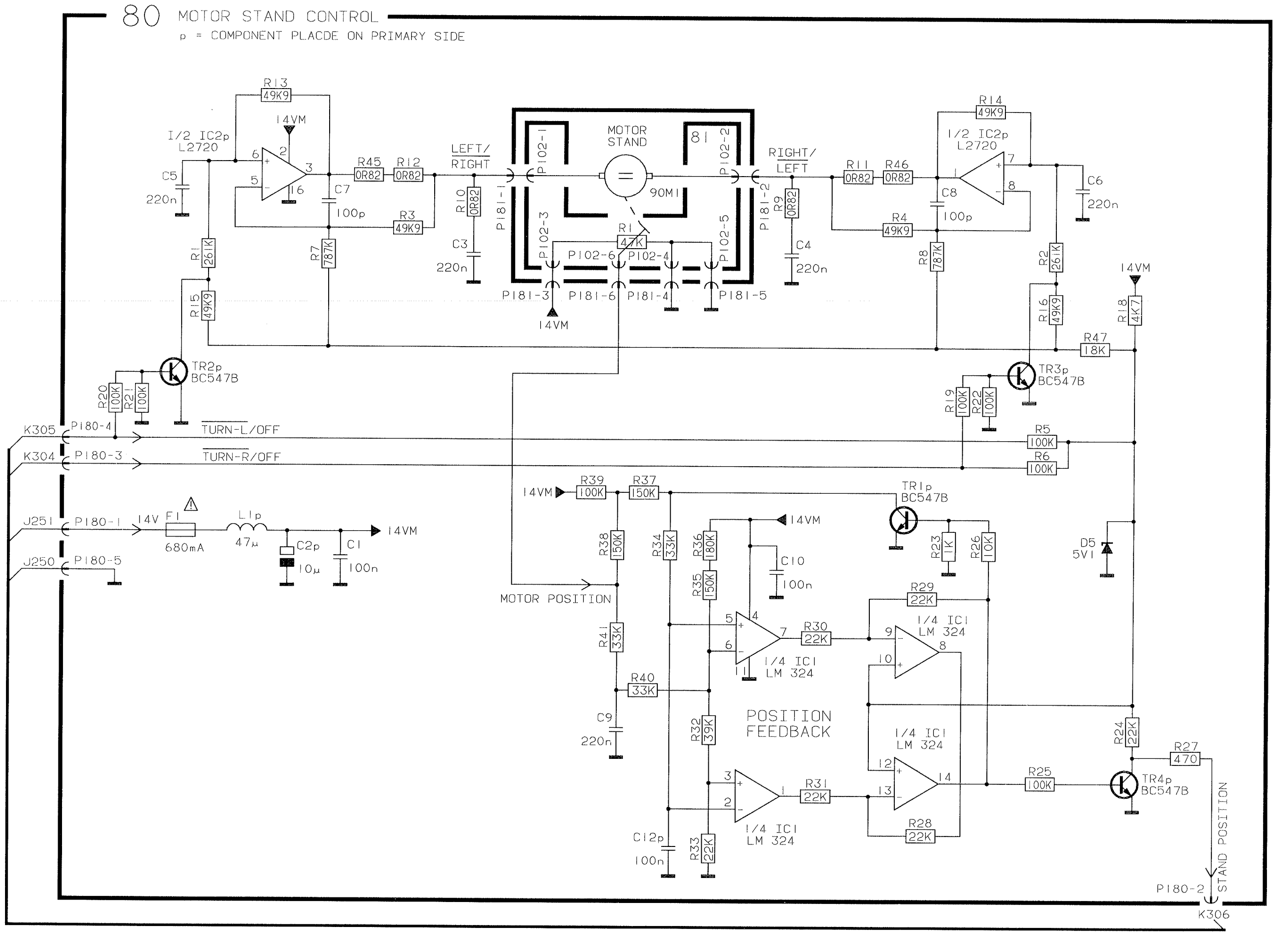
DIAGRAM U DISPLAY & IR

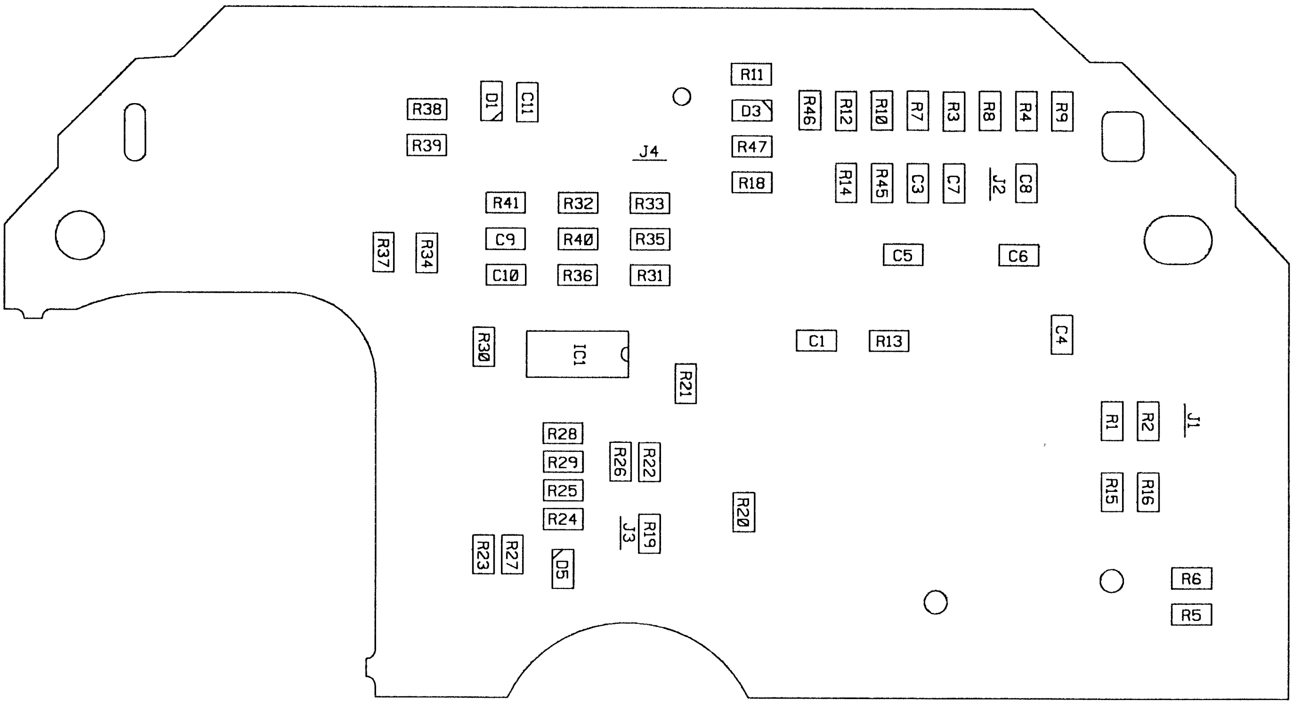

57 OPERATION PANEL
58 DISPLAY & IR
p = COMPONENT PLACED ON THE PRIMARY SIDE
(ST BY)
REWIND
PLAY TIMER
TV STEP UP
SAT STEP UP
V TAPE
EJECT
SAT STEP DOWN
TV STEP DOWN
IC4 74HC147
9→4 LINE DECODER
KEYBOARD CONTROL
DO STEREO
DO PRO LOGIC
DP2p
TIMER
RECORD
PT
D2p ST BY
IC1 4094B
STROBE
DATA
OE
CLP
3 STEREO
PROLOGIC
TIMER
RECORD
PT
ST BY
REG SELECT
CSD STROBE
CSD DATA
CSD CLP
DP1p HCMS2972
CE
RESET
OSC
BLANK
IC6 4071
DISPLAY BRILLIANCE
RESET
TR1 BC847B
1/4 IC3 LM339M
OSC
PULSE WIDTH MODULATOR
LIGHT SENSOR
PE1p BPW16W
1/2 IC5 LM358M
TR9 BC847B
LEVEL SHIFTER
TR8 BC847B
VOLTAGE TO CURRENT CONVERTER
LIGHT P63-1
B103
TR4 BF840
TR5 BF840
L1p 455kHz
L2p 455kHz
INPUT STAGE
320kHz
500kHz
AGC
IC2 U2506B
V STAB
NOISE SUPPR
PULSE COUNTER
PULSE FOR-MER
IR RECEIVER
1/4 IC3 LM339M
P63-3 IR
K298
5VSB
4.8VSB
8VSB

FUNCTION TABLE FOR IC4

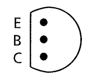
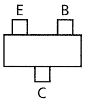
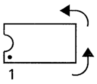
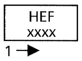
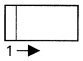
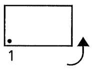
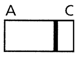
INPUTS									OUTPUTS			
IN1	IN2	IN3	IN4	IN5	IN6	IN7	IN8	IN9	04	03	02	01
H	H	H	H	H	H	H	H	H	H	H	H	H
X	X	X	X	X	X	X	X	L	L	H	H	L
X	X	X	X	X	X	X	L	H	L	H	H	H
X	X	X	X	X	X	L	H	H	H	L	L	L
X	X	X	X	X	L	H	H	H	H	L	L	H
X	X	X	X	L	H	H	H	H	H	L	H	L
X	X	X	L	H	H	H	H	H	H	L	H	H
X	X	L	H	H	H	H	H	H	H	H	L	L
X	L	H	H	H	H	H	H	H	H	H	L	H
L	H	H	H	H	H	H	H	H	H	H	H	L

DIAGRAM V MOTOR STAND CONTROL


80 MOTOR STAND CONTROL
p = COMPONENT PLACDE ON PRIMARY SIDE
R13 49K9
14VM
1/2 IC2p L2720
C5 220n
R45 0R82
R12 0R82
LEFT/ RIGHT
C7 100p
R3 49K9
R1 261K
R7 787K
R15 49K9
R10 0R82
C3 220n
P102-1
P181-1
P102-3
MOTOR STAND
90M1
81
R1 47K
P102-6
P102-4
P102-5
P102-2
P181-2
P181-3
P181-6
P181-4
P181-5
RIGHT/ LEFT
R9 0R82
C4 220n
R11 0R82
R46 0R82
C8 100p
R4 49K9
R8 787K
R14 49K9
C6 220n
R2 261K
R16 49K9
R18 4K7
R47 18K
TR2p BC547B
R20 100K
R21 100K
TR3p BC547B
R19 100K
R22 100K
K305
P180-4
TURN-L/OFF
K304
P180-3
TURN-R/OFF
R5 100K
R6 100K
J251
P180-1
14V
F1 680mA
L1p 47μ
C2p 10μ
C1 100n
J250
P180-5
R39 100K
R37 150K
TR1p BC547B
R38 150K
R34 33K
R36 180K
R35 150K
C10 100n
R23 1K
R26 10K
D5 5V1
MOTOR POSITION
R41 33K
R30 22K
R29 22K
1/4 IC1 LM 324
R40 33K
C9 220n
R32 39K
POSITION FEEDBACK
R24 22K
R27 470
R31 22K
R25 100K
TR4p BC547B
C12p 100n
R33 22K
R28 22K
STAND POSITION
P180-2
K306


R11
R38
D1
C11
D3
R46
R12
R10
R7
R3
R8
R4
R9
R39
R47
J4
R18
R14
R45
C3
C7
J2
C8
R41
R32
R33
R37
R34
C9
R40
R35
C5
C6
C10
R36
R31
C1
R13
C4
R30
IC1
R21
R1
R2
J1
R28
R29
R26
R22
R15
R16
R25
R24
R20
J3
R19
R23
R27
D5
R6
R5

LIST OF ELECTRICAL PARTS

18	51	136	149	150	151	250	
							

Resistors not referred to are standard, see page 3-22

PCB 1, 8008323 Tuner & IF system B/G (incl. PCB 12)

IC3	8341794	**136**	TDA 8417

TR1	8320552	**18**	BC 327-25	TR11	8320811	**51**	BC 857B
TR5				TR15	8320755	**51**	BC 847B
TR6	8320755	**51**	BC 847B	TR19	8320811	**51**	BC 857B
TR7	8320811	**51**	BC 857B				
TR8-	8320755	**51**	BC 847B				
TR10							

D1-	8300482	**250**	LL 4148	D15	8300482	**250**	LL 4148
D12				D16	8300644	**250**	Z6.2V 2% 0.5W
D13-	8300644	**250**	Z6.2V 2% 0.5W	D19	8300911	**250**	Z33V 2% 0.5W
D14				D22	8300941	**250**	Z2.4V 2% 0.5W

R1	5011633	820Ω 5% 1/4W	R73-	5021074	680Ω 1% 1/4W
R2	5011852	332Ω 1% 1/4W	R74		
R23-	5021225	10KΩ 1% 1/4W	R75	5021334	3.32KΩ 1% 1/4W
R24			R76-	5021371	255Ω 1% 1/4W
R25	5021371	255Ω 1% 1/4W	R77		
R26-	5021508	47KW 1% 1/4W	R78	5021372	5.36KΩ 1% 1/4W
R28			R79	5021494	4.64KΩ 1% 1/4W
R31	5021512	220Ω 1% 1/4W	R90	5021225	10KΩ 1% 1/4W
R34	5021512	220Ω 1% 1/4W	R92	5021074	680Ω 1% 1/4W
R35	5021517	30.9KΩ 1% 1/4W	R96-	5021512	220Ω 1% 1/4W
R52-	5012181	12.1Ω 1% 1/4W	R97		
R53			R98	5021489	22KΩ 1% 1/4W
R55-	5012181	12.1Ω 1% 1/4W	R99-	5021508	47KΩ 1% 1/4W
R57			R102		
R60	5012181	12.1Ω 1% 1/4W	R103-	5021512	220Ω 1% 1/4W
R63	5012181	12.1Ω 1% 1/4W	R104		
R65	5012181	12.1Ω 1% 1/4W	R110	5021516	18.7KΩ 1% 1/4W
R71	5012209	1.87KΩ 1% 1/4W			

C2	4000404	22pF 5% 50V	C31-	4010314	220nF -20+80% 25V
C5	4000400	10pF 5% 50V	C32		
C6	4010274	100nF -20+80% 25V	C33-	4200824	22µF 20% 50V
C7	4200824	22µF 20% 50V	C34		
C8	4201171	1µF 20% 50V	C39	4200628	100µF 20% 16V
C9	4000400	10pF 5% 50V	C40	4200688	47µF 20% 50V
C10	4010216	22nF 10% 100V	C42	4010314	220nF -20+80% 25V
C12	4010216	22nF 10% 100V	C45	4200824	22µF 20% 50V
C20	4010273	47nF -20+80% 50V	C61	4010274	100nF -20+80% 25V
C21	4010263	2.2nF 10% 50V			

L2-	8020916	Coil 47µH 450mA	L98-	8021082	Coil 8.2µH 10%
L3			L99		
L4	8021077	Coil 0.47µH 10%			

TU1	8050148	Tuner UV 916mA

X10	8090105	Crystal 10.0MHz

P27-	7229141	Holder f/ribbon cable	P89	7221046	Plug 6/6 pole
P28		10 pole	P92	7500296	Contact pin
P72	7221121	Plug 16/16 pole			

PCB 1, 8008324 Tuner & IF system I (incl. PCB 12)

IC2Δ	8341072	**149**	4053				

TR13-TR14	8320755	**51**	BC 847B	TR17	8320811	**51**	BC 857B

D26	8300644	**250**	Z6.2V 2% 0.5W

C1	4010265	3.3nF 5% 50V	C35	4201174	2.2μF 20% 50V
C22	4010274	100nF -20+80% 25V	C37	4200525	22μF 20% 10V
C28	4200824	22μF 20% 50V	C41	4200824	22μF 20% 50V

Other electrical parts like PCB 1, Tuner & IF system B/G

PCB 1, 8008327 Tuner & IF system B/G/L/L' (incl. PCB 12)

C30	4010314	220nF -20+80% 25V
L97	8021080	Coil 3.9μH 10%
BP4	8030242	Cer. filter 6.5MHz

Other electrical parts like PCB 1, Tuner & IF system B/G

PCB 1, 8008326 Tuner & IF system B/G/L/L'/I (incl. PCB 12)

C41	4200824	22μF 20% 50V
L97	8021080	Coil 3.9μH 10%
BP4	8030242	Cer. filter 6.5MHz

Other electrical parts like PCB 1, Tuner & IF system B/G

PCB 1, 8008325 Tuner & IF system B/G/D/K/M/I (incl. PCB 12)

TR13	8320755	**51**	BC 847B	TR17	8320811	**51**	BC 857B

C1	4010265	3.3nF 10% 50V	C37	4200525	22μF 20% 10V
C30	4010314	220nF -20+80% 25V	C41	4200824	22μF 20% 50V

Other electrical parts like PCB 1, Tuner & IF system B/G

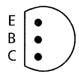
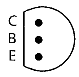
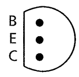
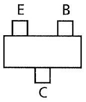
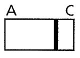
PCB 2, 8008363 Video/Chroma & Teletext (incl. PCB 41)

IC1Δ	8341025	**149**	4094	IC7Δ	8342193	**136**	TDA 9162
IC2	8341933	**136**	TDA 4565	IC8	8341033	**149**	LF 353
IC3Δ	8342343	**150**	TDA 4661	IC9	8341041	**150**	LM 324
IC4	8341708	**136**	TDA 4780	IC10	8341857	**151**	LM 339
IC6Δ	8342361	**136**	SDA 5273	IC11Δ	8341025	**149**	4094

TR1	8320497	**18**	BC 547B	TR17-TR18	8320755	**51**	BC 847B
TR2	8320755	**51**	BC 847B	TR19-TR22	8320497	**18**	BC 547B
TR3	8320740	**51**	BF 840	TR23-TR32	8320755	**51**	BC 847B
TR4-TR7	8320755	**51**	BC 847B	TR33-TR35	8320811	**51**	BC 857B
TR8-TR9	8320497	**18**	BC 547B	TR36	8320503	**18**	BC 557B
TR10	8320740	**51**	BF 840	TR37	8320811	**51**	BC 857B
TR11-TR13	8320755	**51**	BC 847B	TR38	8320503	**18**	BC 557B
TR14	8320497	**18**	BC 547B	TR39	8320497	**18**	BC 547B
TR15	8320755	**51**	BC 847B	TR40	8320755	**51**	BC 847B
TR16	8320497	**18**	BC 547B				

Δ indicates that static electricity may destroy the component

⇨

18	19	23	51	250			
							

Resistors not referred to are standard, see page 3-22

TR41	8320497	**18**	BC 547B
TR42-TR43	8320755	**51**	BC 847B
TR44-TR46	8320552	**18**	BC 327-25
TR47	8320755	**51**	BC 847B
TR48-TR49	8320740	**51**	BF 840
TR50	8321072	**19**	ZTX 690B
TR51-TR54	8320755	**51**	BC 847B
TR55-TR56	8320552	**18**	BC 327-25
TR57	8320811	**51**	BC 857B

TR58-TR59	8320567	**23**	BF 450
TR60-TR61	8320740	**51**	BF 840
TR62	8320811	**51**	BC 857B
TR63	8320755	**51**	BC 847B
TR64-TR65	8320497	**18**	BC 547B
TR66	8320811	**51**	BC 857B
TR67	8320503	**18**	BC 557B
TR68	8320740	**51**	BF 840
TR69	8320755	**51**	BC 847B
TR70	8320552	**18**	BC 327-25
TR71	8320811	**51**	BC 857B

D1-D4	8300482	**250**	LL 4148
D5	8300606	**250**	LL 4448
D6	8300635	**250**	BA 683
D7-D18	8300482	**250**	LL 4148
D19	8300635	**250**	BA 683
D20-D21	8300482	**250**	LL 4148
D22	8300644	**250**	Z6.2V 2% 0 .5W
D23	8300563	**250**	Z5.1V 2% 0.5W
D24-D25	8300644	**250**	Z6.2V 2% 0.5W
D26	8300762	**250**	Z9.1V 2% 0.5W
D27	8300635	**250**	BA 683
D28-D29	8300482	**250**	LL 4148
D30-D31	8300635	**250**	BA 683

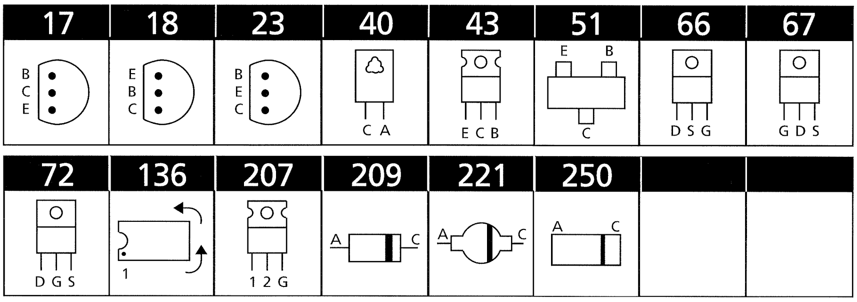
D32	8300482	**250**	LL 4148
D33	8300644	**250**	Z6.2V 2% 0.5W
D34	8300772	**250**	Z24V 5% 0.4W
D35	8300562	**250**	Z5.6V 2% 0.5W
D36	8300774	**250**	5.1V 5% 0.5W
D37-D40	8300606	**250**	LL 4448
D41-D42	8300636	**250**	Z7.5V 5% 0.5W
D43-D46	8300606	**250**	LL 4448
D47-D48	8300636	**250**	Z7.5V 5% 0.5W
D49-D51	8300482	**250**	LL 4148
D52	8300606	**250**	LL 4448

R10	5021501	390Ω 1% 1/4W
R18	5011903	180Ω 1% 1/4W
R23	5011842	1.05KΩ 1% 1/8W
R24	5011859	8.25KΩ 1% 1/4W
R29	5021511	470Ω 1% 1/4W
R30	5011557	10KΩ 1% 1/8W
R31	5021074	680Ω 1% 1/4W
R32-R33	5011631	1KΩ 1% 1/4W
R34	5011912	1.2KΩ 1% 1/8W
R136	5021511	470Ω 1% 1/4W
R155	5012297	5.62KΩ 1% 1/10W
R160	5012297	5.62KΩ 1% 1/10W
R166	5012332	4.7KΩ 1% 1/10W
R181	5012361	1.5KΩ 1% 1/10W
R198	5021484	100Ω 1% 1/4W
R210	5012218	11.8KΩ 1% 1/10W
R211-R212	5012240	100KΩ 1% 1/10W
R222	5012223	4.64KΩ 1% 1/8W
R224	5012309	5.36KΩ 1% 1/10W
R252	5012365	11KΩ 1% 1/10W
R255	5012331	10KΩ 1% 1/10W
R258	5012298	22KΩ 1% 1/10W
R262	5012242	47KΩ 1% 1/10W
R263-R264	5012161	3.9KΩ 1% 1/8W

R265	5012242	47KΩ 1% 1/10W
R266	5012239	39KΩ 1% 1/10W
R267	5011983	324Ω 1% 1/8W
R268-R270	5021511	470Ω 1% 1/4W
R271	5012131	316Ω 1% 1/8W
R273-R275	5021226	100KΩ 1% 1/4W
R276	5012230	1KΩ 1% 1/10W
R278	5012131	316Ω 1% 1/8W
R279	5012331	10KΩ 1% 1/10W
R280	5021484	100Ω 1% 1/4W
R281-R282	5012131	316Ω 1% 1/8W
R283-R284	5021484	100Ω 1% 1/4W
R285	5021511	470Ω 1% 1/4W
R286	5021484	100Ω 1% 1/4W
R287-R288	5021074	680Ω 1% 1/4W
R289	5021226	100KΩ 1% 1/4W
R291	5011631	1KΩ 1% 1/4W
R292-R295	5021512	220Ω 1% 1/4W
R296	5012217	150KΩ 1% 1/10W
R299	5021494	4.64KΩ 1% 1/4W
R302	5021484	100Ω 1% 1/4W

R303	5021226	100KΩ 1% 1/4W
R304	5012350	27.4KΩ 1%1/10W
R306	5021226	100KΩ 1% 1/4W
R307-R308	5021512	220Ω 1% 1/4W

C1	4000412	100pF 5% 50V
C2	4000400	10pF 5% 50V
C3-C4	4000412	100pF 5% 50V
C5	4000219	10pF ±0.5pF 50V
C6-C7	4000404	22pF 5% 50V
C8	4000219	10pF ±0.5pF 50V
C9	4000410	68pF 5% 50V
C10	4000219	10pF ±0.5pF 50V
C11	4010316	100nF 10% 25V
C12	4010314	220nF -20+80% 25V
C13	4000412	100pF 5% 50V
C14-C15	4000411	82pF 5% 50V
C16-C18	4000412	100pF 5% 50V
C19-C20	4000420	470pF 5% 50V
C21	4000416	220pF 5% 50V
C22	4010274	100nF -20+80% 25V
C23	4000420	470pF 5% 50V
C24	4000406	33pF 5% 50V
C25	4000413	120pF 5% 50V
C26	4000416	220pF 5% 50V
C27	4010274	100nF -20+80% 25V
C28	4000406	33pF 5% 50V
C29-C31	4000422	680pF 5% 50V
C32	4130070	1µF 10% 50V
C33	4010274	100nF -20+80% 25V
C34	4100237	2.2nF 5% 63V
C35-C36	4010274	100nF -20+80% 25V
C37	4010272	22nF -20+80% 50V
C38	4000420	470pF 5% 50V
C39	4010272	22nF -20+80% 50V
C40-C42	4000290	22nF 10% 50V
C43	4010274	100nF -20+80% 25V
C44-C45	4010272	22nF -20+80% 50V
C46	4010274	100nF -20+80% 25V
C47	4000413	120pF 5% 50V
C48	4010271	10nF 10% 50V
C49	4000420	470pF 5% 50V
C50-C51	4010220	100nF 10% 50V
C52-C60	4010274	100nF -20+80% 25V
C61	4000420	470pF 5% 50V
C62	4010314	220nF -20+80% 25V
C63	4010274	100nF -20+80% 25V
C64	4010220	100nF 10% 50V
C65	4000287	220nF -20+80% 25V
C66-C67	4010314	220nF -20+80% 25V
C68-C70	4000287	220nF -20+80% 25V
C71	4130070	1µF 10% 50V
C72-C75	4010316	100nF 10% 25V
C76	4130070	1µF 10% 50V
C77	4000287	220nF -20+80% 25V
C78	4000420	470pF 5% 50V
C79	4010316	100nF 10% 25V
C80	4010314	220nF -20+80% 25V
C81	4200628	100µF 20% 16V
C82-C83	4130236	330nF 20% 63V
C84	4000402	15pF 5% 50V
C85	4100301	1nF 2.5% 63V
C86	4201173	10µF 20% 50V
C87	4000420	470pF 5% 50V
C88	4201256	470µF 20% 25V
C89	4201329	1000µF 20% 16V
C90	4200403	100µF 20% 25V
C91	4010274	100nF -20+80% 25V
C92-C93	4200508	22µF 20% 25V
C94	4201173	10µF 20% 50V
C95	4010314	220nF -20+80% 25V
C96	4201173	10µF 20% 50V
C97	4010314	220nF -20+80% 25V
C98	4200628	100µF 20% 16V
C99	4000402	15pF 5% 50V
C100	4201173	10µF 20% 50V
C101	4000234	47pF 5% 50V
C102	4201171	1µF 20% 50V
C103	4200512	1µF 20% 50V
C104	4201171	1µF 20% 50V
C105	4200672	22µF 20% 16V Bipolar
C106	4130313	470nF 20% 63V
C107	4201170	0.47µF 20% 50V
C108-C109	4201171	1µF 20% 50V
C110	4000402	15pF 5% 50V
C111	4000412	100pF 5% 50V
C112	4000416	220pF 5% 50V
C113	4000412	100pF 5% 50V
C114	4000416	220pF 5% 50V
C115	4100238	3.3nF 5% 63V
C116	4130328	33nF 5% 63V
C117	4010265	3.3nF 10% 50V
C118	4200508	22µF 20% 25V
C119	4010274	100nF -20+80% 25V
C120	4010271	10nF 10% 50V
C121	4010274	100nF -20+80% 25V
C122	4010314	220nF -20+80% 25V
C123	4010274	100nF -20+80% 25V
C124	4201256	470µF 20% 25V
C125	4130266	82nF 5% 63V
C126	4130267	18nF 5% 63V
C127-C128	4010340	150nF 10% 25V
C129	4201256	470µF 20% 25V
C130	4201171	1µF 20% 50V
C131	4200508	22µF 20% 25V
C132	4000408	47pF 5% 50V
C133	4201173	10µF 20% 50V
C134-C135	4201171	1µF 20% 50V
C136	4200688	47µF 20% 50V
C137	4000408	47pF 5% 50V
C138	4010316	100nF 10% 25V
C139	4000416	220pF 5% 50V
C140	4100301	1nF 2.5% 63V
C141	4200403	100µF 20% 25V
C142-C143	4010274	100nF -20+80% 25V



Resistors not referred to are standard, see page 3-22

L1	8020749	Coil 10µH	L7	8021081	Coil 4.7µH 10%
L2-	8021083	Coil 3.3µH 10%	L8	8020916	Coil 47µH 5% 450mA
L4			L9	8020851	Coil 560µH 10%
L5-	8020916	Coil 47µH 5% 450mA	L10	8021089	Coil 8.2µH 10%
L6					

X1	8090197	Crystal 4.433619MHz	X3	8090186	Crystal 20.48MHz
X2	8090198	Crystal 3.579545MHz			

P29-	7229141	Holder f/ribbon cable	P34	7221133	Socket 8/8 pole
P33		10 pole	P35	7221121	Socket 16/16 pole

PCB 3, 8008364 Video Output

TR1-	8320961	**17**	BF 421	TR51	8320497	**18**	BC 547B
TR3				TR52	8320503	**18**	BC 557B
TR4-	8320962	**43**	BF 871	TR53	8321115	**43**	BD 830
TR6				TR54	8321114	**43**	BD 829
	3358282		Heat sink	TR55	8320755	**51**	BC 847B
			f/TR4-6	TR56	8320811	**51**	BC 857B
	3152902		Holder f/TR4-6				

D1-	8300865	**209**	BAV 21	D51-	8300606	**250**	LL 4448
D4				D52			
D5-	8300058	**209**	1N 4148	D53	8300058	**209**	1N 4148
D16				D54-	8300482	**250**	LL 4148
D19-	8300058	**209**	1N 4148	D58			
D21							

R1-	5021395	8.2KΩ 5% 3W	R60-	5021225	10KΩ 1% 1/4W
R3			R61		
R10-	5001167	2.2KΩ 10% 1/2W	R69-	5011631	1KΩ 1% 1/4W
R12			R70		
R18	5020345	47Ω 10% 0.3W	R73-	5021490	28Ω 1% 1/4W
R19	5010806	1.2KΩ 5% 1/3W	R74		
R52	5021225	10KΩ 1% 1/4W	R76	5020345	47Ω 10% 0.3W
R54	5021225	10KΩ 1% 1/4W			

C1-	4000153	33pF 5% 50V	C55-	4130070	1µF 10% 50V
C3			C56		
C4	4130098	100nF 20% 400V	C57	4130306	100nF 10% 63V
C5	4010211	2.2nF -0+100% 2000V	C59-	4200628	100µF 20% 16V
C6	4200515	4.7µF 20% 25V	C60		
C7	4130308	220nF 10% 63V	C61	4201309	100µF 20% 63V
C51-	4130230	100nF 20% 63V	C62	4200510	10µF 20% 16V
C52			C63	4010220	100nF 10% 50V
C53-	4010220	100nF 10% 50V			
C54					

L1	8020590	Coil 270µH 10%

P10	7200119	Socket picture tube	P40	7221043	Plug 3/3 pole
P37	7221133	Plug 8/8 pole	P70	7500152	Contact pin
P38	7221079	Plug 7/7 pole			

PCB 4, 8008365 Power Supply

IC1-	8330297	**136**	CNY 17F2ZW	IC3	8330234	**136**	CNY 17-2ZW
IC2							

TR02	8320503	**18**	BC 557B	TR84	8320503	**18**	BC 557B
TR03	8320497	**18**	BC 547B	TR85	8320552	**18**	BC 327-25
TR41Δ	8321078	**72**	STH 7N90FI	TR86	8320497	**18**	BC 547B
	2816154		Spring clip	TR91-	8320497	**18**	BC 547B
TR51	8320503	**18**	BC 557B	TR92			
TR52	8320497	**18**	BC 547B	TR93	8320503	**18**	BC 557B
TR53	8320503	**18**	BC 557B	TR111Δ	8320946	**67**	IRF Z24
TR61	8320497	**18**	BC 547B	TR122Δ	8320853	**66**	IRF 624
TR62	8320503	**18**	BC 557B	TR124	8320497	**18**	BC 547B
TR63	8320625	**23**	BF 240	TR141	8320503	**18**	BC 557B
TR81	8320503	**18**	BC 557B	TR142	8320497	**18**	BC 547B
TR82-	8320497	**18**	BC 547B	TR161	8320497	**18**	BC 547B
TR83				TR162	8320503	**18**	BC 557B

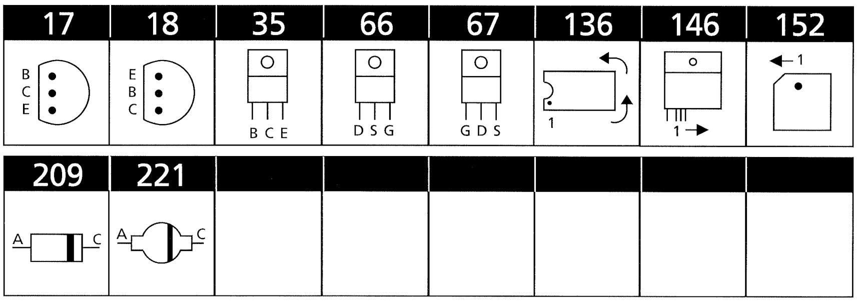
D1	8300901		Bridge	D113	8300058	**209**	1N 4148
D3	8300201	**209**	Z6.2V 5% 0.4W	D114	8300310	**209**	Z10V 5% 0.4W
D15	8300058	**209**	1N 4148	D121	8300776	**40**	BYW 29F
D41-	8300902	**221**	BYV 26C		2816195		Spring clip
D42				D122	8300058	**209**	1N 4148
D43-	8300675	**209**	BYV 26B	D123	8300671	**209**	RGP 10B
D44				D124	8300058	**209**	1N 4148
D51	8300671	**209**	RGP 10B	D125	8300310	**209**	Z10V 5% 0.4W
D61	8300058	**209**	1N 4148	D127	8300310	**209**	Z10V 5% 0.4W
D81-	8300058	**209**	1N 4148	D141	8300310	**209**	Z10V 5% 0.4W
D83				D142-	8300058	**209**	1N 4148
D92-	8300058	**209**	1N 4148	D143			
D93				D144	8300903	**209**	Z6.2V 1%
D101	8300784	**221**	BYW 96D	D162	8300058	**209**	1N 4148
D102	8300670	**221**	BYV 26D	D163	8300201	**209**	Z6.2V 5% 0.4W
D103	8300671	**209**	RGP 10B	D164	8300058	**209**	1N 4148
D111	8300388	**209**	RGP 30P				
D112	8300776	**40**	BYW 29F				
	2816195		Spring clip				

ST51	8300320	**207**	BTB 06

R9	5011209	10MΩ 5% 1/2W	R144	5020183	464Ω 1% 1/4W
R10	5011378	0.82Ω 5% 1/4W	R148	5021186	442Ω 1% 1/4W
R51	5230030	PTC 18+3000Ω 265V	R150	5021480	305KΩ 0.25% 1/4W
R59	5020714	0.1Ω 10% 0.4W	R151	5021481	15KΩ 0.25% 1/4W
R103	5020714	0.1Ω 10% 0.4W			

C1	4130169	47nF 20% 250V	C93	4010105	1nF 10% 50V
C4	4201273	150µF 20% 450V	C94	4000204	100pF 5% 63V
C5-	4010240	2.2nF 20% 400V	C95	4010101	4.7nF 10% 50V
C6			C101-	4010104	220pF 10% 500V
C7	4130169	47nF 20% 250V	C102		
C20	4201173	10µF 20% 50V	C103	4201274	100µF 20% 385V
C42-	4010104	220pF 10% 500V	C104	4130523	15nF 20% 250V
C43			C105	4200704	470µF 20% 25V
C44	4130570	4.7nF 20% 1000V	C106	4010105	1nF 10% 50V
C45	4010106	10nF -20+80% 40V	C111	4130230	100nF 20% 63V
C49	4010346	100pF 10% 2KV	C112	4201300	470µF 20% 63V
C50	4010105	1nF 10% 50V	C113	4010105	1nF 10% 50V
C51	4130098	100nF 20% 400V	C114	4200612	1000µF -20+50% 25V
C52	4130304	22nF 10% 63V	C115	4200688	47µF 20% 50V
C53	4130230	100nF 20% 63V	C121	4010105	1nF 10% 50V
C54	4200688	47µF 20% 50V	C122	4200612	1000µF -20+50% 25V
C55	4200628	100µF 20% 16V	C123	4201328	3300µF 20% 16V
C61	4010328	470pF 10% 1KV	C124	4130230	100nF 20% 63V
C62	4100235	680pF 5% 63V	C125-	4010105	1nF 10% 50V
C63	4130230	100nF 20% 63V	C126		
C82	4000168	120pF 5% 63V	C141	4000153	33pF 5% 50V
C83	4201173	10µF 20% 50V	C142	4200517	2.2µF 20% 50V
C84	4100236	1nF 5% 63V	C161	4200517	2.2µF 20% 50V
C91	4010106	10nF -20+80% 40V			

Δ indicates that static electricity may destroy the component



Resistors not referred to are standard, see page 3-22

L41	8022347	Coil 260µH	L91	6850209	Coil 0.5µH
L42	8020551	Coil 4.7µH 10%	L101	8021015	Coil 1µH 10%
L51	8020912	Coil 100µH 10%			

FE2	6710036	Ferrit core	FE6-	6710036	Ferrit core
FE3-	6710034	Ferrit core	FE7		
FE4			FE8	6710031	Ferrit core
FE5	6710031	Ferrit core			

T1	8014139	Transformer

P41-	7229141	Holder f/ribbon cable	P44	7221044	Plug 4/4 pole
P42		10 pole	P45	7211101	Plug 4 pole
P43	7221046	Plug 6/6 pole	P46	7221057	Plug 2/3 pole

PCB 5, 8008366 Deflection & EHT

IC1	8340157	**136**	LM 324
IC2	8340794	**146**	TDA 8172
	2816195		Spring clip

TR1-	8320497	**18**	BC 547B	TR10Δ	8321100	**67**	IRF 740FI
TR3					2816195		Spring clip
TR4	8320552	**18**	BC 327-25	TR11	8321102	**35**	BU 2508AX
TR5	8320497	**18**	BC 547B		2816154		Spring clip
TR6	8320503	**18**	BC 557B	TR12Δ	8320853	**66**	IRF 624
TR7	8320497	**18**	BC 547B	TR13	8320505	**17**	BF 422
TR8-	8320503	**18**	BC 557B	TR14	8320507	**18**	BC 337-25
TR9				TR15	8320497	**18**	BC 547B

D1-	8300058	**209**	1N 4148	D53	8300304	**221**	BY 228
D5				D54	8300310	**209**	Z10V 5% 0.4W
D6-	8300518	**209**	BA 157	D55-	8300058	**209**	1N 4148
D7				D56			
D8-	8300058	**209**	1N 4148	D71-	8300943	**221**	BYW 95C
D10				D73			
D11	8300518	**209**	BA 157	D74	8300023	**209**	1N 4002
D12-	8300058	**209**	1N 4148	D75-	8300058	**209**	1N 4148
D13				D76			
D14	8300310	**209**	Z10V 5% 0.4W	D77-	8300671	**209**	RGP 10B
D21	8300671	**209**	RGP 10B	D78			
D50	8300304	**221**	BY 228				
D51-	8300943	**221**	BYW 95C				
D52							

R11	5020228	8.87KΩ 1% 1/4W	R64	5021300	0.22Ω 5% 1/4W
R25	5020183	464Ω 1% 1/4W	R75	5021299	0.47Ω 5% 1/4W
R50	5390033	100MΩ	R101	5020288	1MΩ 1% 1/4W
R53	5021300	0.22Ω 5% 1/4W	R103	5021300	0.22Ω 5% 1/4W

C1	4010345	470pF 10% 50V	C4	4010400	1nF 10% 50V
C2	4010344	220pF 10% 50V	C5	4010344	220pF 10% 50V
C3	4010345	470pF 10% 50V	C6	4010401	2.2nF 10% 50V

Δ indicates that static electricity may destroy the component

⇨

C7	4010402	4.7nF 10% 50V	C54	4130578	27nF 5% 400V
C8	4010401	2.2nF 10% 50V	C55	4010402	4.7nF 10% 50V
C9	4010402	4.7nF 10% 50V	C56	4130581	470nF 5% 250V
C10	4010404	22nF -20+80% 50V	C57	4130580	220nF 5% 250V
C11	4201311	22µF 20% 100V	C58	4010347	1nF 10% 500V
C12	4010346	100pF 10% 2KV	C59	4130581	470nF 5% 250V
C13	4130575	3.9nF 5% 2000V	C62	4130601	1µF 5% 100V
C14	4010346	100pF 10% 2KV	C63	4130309	330nF 10% 63V
C15-	4010400	1nF 10% 50V	C64	4010403	10nF -20+80% 50V
C16			C71-	4200704	470µF 20% 25V
C17	4130230	100nF 20% 63V	C73		
C18	4130475	1µF 10% 250V	C74	4200368	100µF 20% 63V
C19	4201173	10µF 20% 50V	C75	4200512	1µF 20% 50V
C20	4010404	22nF -20+80% 50V	C76-	4130233	220nF 20% 63V
C21	4200368	100µF 20% 63V	C78		
C22	4010400	1nF 10% 50V	C83	4010401	2.2nF 10% 50V
C23	4010402	4.7nF 10% 50V	C84	4200704	470µF 20% 25V
C24	4130233	220nF 20% 63V	C85	4010402	4.7nF 10% 50V
C25	4010106	10nF -20+80% 40V	C86	4200368	100µF 20% 63V
C52	4130576	3.3nF 5% 630V	C87	4010343	150pF 10% 50V
C53	4130577	10nF 5% 2000V	C88	4130596	15nF 20% 400V

L1	8020666	Coil 2.7µH 5%	L52	8024056	Coil
L2	8020916	Coil 47µH 5% 450mA	L53	8024058	Coil 900µH/UU15
L49	8021088	Coil 47µH 1.8A	L54	8024057	Coil 9mH/U15
L50	8020901	Coil 10mH 10% 70mA			

T1	8014136	Transformer EHT	T2	8014138	Transformer 12mH

S7	7400425	Switch 3 pole

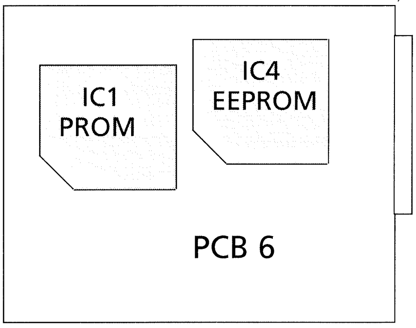
P47-	7229141	Holder f/ribbon cable	P50	7221079	Socket 7/7 pole
P48		10 pole	P51	7221046	Socket 6/6 pole
P49	7221046	Socket 6/6 pole	P73	7221043	Socket 3/3 pole

PCB 6, 8008368
Main Microcomputer

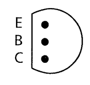
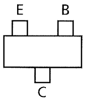
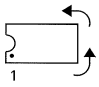
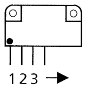
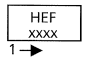
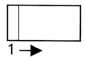
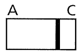
IC1*	8342566	**152** 27C040	IC4	8341576	**152** EEPROM 28C64

EEPROM 6IC4
The following general data is stored in the EEPROM (6IC4):
- Program nos. (tuning data)
- Teletext memory (teletext pages per program no.)
- Preset values for sound and picture
- Timer Record data
- Timer Play data
- Geometry adjustment data
- Various setup data

When replacing 6IC4 all data will be lost. Concerning adjustment data and preset values, some default values are stored in the PROM IC (6IC1).
When replacing the electrical chassis PCB6 or PCB14 where PCB6 is mounted, the EEPROM should be moved to the new PCB to avoid loss of data.



** Specially selected or adapted sample*

18	51	136	141	149	150	250	
							

Resistors not referred to are standard, see page 3-22

PCB 10, 8008369 Sound Output

IC1	8350088	**141**	STK 4122-2

TR1	8320497	**18**	BC 547B	TR5-	8320755	**51**	BC 847B
TR2	8320503	**18**	BC 557B	TR8			
TR3-	8320993	**51**	FMMT 589TA	TR9-	8320811	**51**	BC 857B
TR4				TR11			

D1	8300482	**250**	LL 4148	D10-	8300772	**250**	Z24V 5% 0.4W
D3-	8300482	**250**	LL 4148	D11			
D5							
D8-	8300605	**250**	Z10V 5% 0.5W				
D9							

R55	5020159	100Ω 10% 0.3W	R58-	5370402	2.2KΩ 30% 0.3W
R56-	5021301	10KΩ 1% 1/8W	R59		
R57			R500	8008151	NTC resistor

C1	4010267	4.7nF 10% 50V	C21	4200672	22µF 20% 16V Bipolar
C2-	4010263	2.2nF 10% 50V	C22	4200510	10µF 20% 16V
C5			C23-	4200688	47µF 20% 50V
C6-	4010271	10nF 10% 50V	C24		
C7			C25-	4201173	10µF 20% 50V
C8-	4010274	100nF -20+80% 25V	C27		
C9			C28	4201264	100µF 20% 50V
C10-	4130233	220nF 20% 63V	C29-	4201295	3300µF 20% 40V
C13			C30		
C14	4130313	470nF 20% 63V	C31	4201143	10µF 20% 25V Bipolar
C15-	4200510	10µF 20% 16V	C32	4010271	10nF 10% 50V
C16			C33-	4010274	100nF -20+80% 25V
C17-	4200617	47µF 20% 10V	C34		
C18					
C19-	4200517	2.2µF 20% 50V			
C20					

L1-	8021031	Coil 47µH 1.4A
L2		

FE1	6710033	Ferrite core

P57	7221044	Socket 4/4 pole	P77-	7221044	Plug 4/4 pole
P58	7221126	Socket 3 pole	P78		
P60	7220206	Socket 5/4 pole			

PCB 11, 8008370
Cross Over Network

IC1-	8341022	**150**	4558	IC6	8341033	**149**	LF 353
IC5							

TR1-	8320755	**51**	BC 847B
TR2			

D1	8300482	**250**	LL 4148

R41	5210017	LDR/LED Opto

C1-	4010157	10nF 10% 50V	C24	4130265	10nF 10% 63V
C2			C25-	4130306	100nF 10% 63V
C3-	4010173	4.7nF 10% 50V	C26		
C7			C27	4130307	150nF 10% 63V
C8	4000345	1.0nF 5% 50V	C28-	4130308	220nF 10% 63V
C9-	4010274	100nF -20+80% 25V	C32		
C20			C33	4130313	470nF 20% 63V
C21	4130240	47nF 10% 63V	C34	4130399	1µF 10% 63V

P79-	7211084	Socket 4/4 pole
P80		

PCB 12, 8008328 IF System B/G

IC1Δ	8341025	**150**	4094	IC4Δ	8342357	**136**	TDA 9815

D26	8300606	**250**	LL 4448

R112	5370455	5KΩ 20%	R113	5370457	470Ω 20%

C5	4010271	10nF 10% 50V	C26	4010312	39nF 10%
C6	4010267	4.7nF 10% 50V	C27	4010274	100nF -20+80% 25V
C7	4010271	10nF 10% 50V	C29	4201219	22µF 20% 10V
C13	4010271	10nF 10% 50V	C36	4201219	22µF 20% 10V
C16-	4010271	10nF 10% 50V	C50	4000505	2.2pF ±0.25pF 50V
C17			C52-	4200847	2.2µF 20% 50V
C18	4010334	220nF 10% 16V	C53		
C19	4010271	10nF 10% 50V	C55-	4000412	100pF 5% 50V
C23	4010274	100nF -20+80% 25V	C56		
C24	4200847	2.2µF 20% 50V	C57	4010271	10nF 10% 50V
C25	4010334	220nF 10% 16V			

L5	8021033	Coil 77.8MHz	L9	8021082	Coil 8.2µH 10%
L6-	8021079	Coil 2.2µH 10%			
L7					

BP3	8030218	Cer. filter 5.5MHz	BP7-	8030029	Cer. filter 5.74MHz
BP5	8030021	Cer. filter 5.5MHz	BP8		
BP6	8030026	Cer. filter 5.5MHz			

SW2	8030319	OFW G3354K

PCB 12, 8008329 IF system I

BP9	8030033	Cer. filter 6.0MHz

SW2	8030318	OFW J3351K

Other electrical parts like PCB 12, IF system B/G

PCB 12, 8008332 IF system B/G/L/L'

TR6	8320554	**18**	BF 199
TR10-	8320755	**51**	BC 847B
TR12			

D15	8300635	**250**	BA 683
D17-	8300635	**250**	BA 683
D18			

C2-	4010271	10nF 10% 50V	C14-	4010271	10nF 10% 50V
C4			C15		
C9	4010271	10nF 10% 50V			

Δ indicates that static electricity may destroy the component

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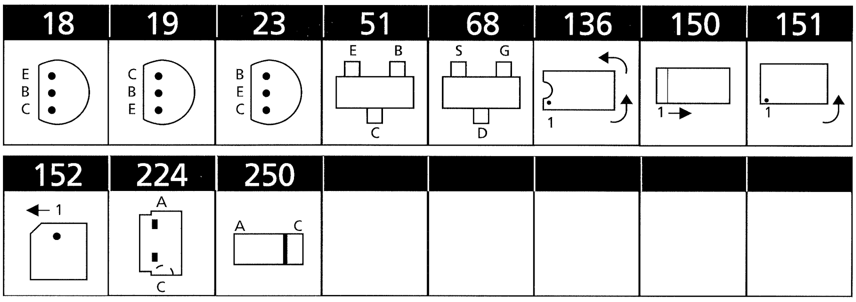

Resistors not referred to are standard, see page 3-22

SW1	8030244 OFW K9453M	SW3	8030317 OFW G9353M
SW2	8030316 OFW K3953M		

Other electrical parts like PCB 12, IF system B/G

PCB 12, 8008331
IF system B/G/L/L'/I

TR6	8320554	**18**	BF 199
TR10-	8320755	**51**	BC 847B
TR12			

D15	8300635	**250**	BA 683
D17-	8300635	**250**	BA 683
D18			

C2-	4010271	10nF 10% 50V	C14-	4010271	10nF 10% 50V
C4			C15		
C9	4010271	10nF 10% 50V			

BP9	8030033	Cer. filter 6.0MHz

SW1	8030244 OFW K9453M	SW3	8030317 OFW G9353M
SW2	8030316 OFW K3953M		

Other electrical parts like PCB 12, IF system B/G

PCB 12, 8008330
IF system B/G/D/K/M/I

TR6	8320554	**18**	BF 199	TR16	8320755	**51**	BC 847B
TR7	8320752	**51**	BC 817-40				
TR10-	8320755	**51**	BC 847B				
TR12							

D11	8300635	**250**	BA 683	D20-	8300635	**250**	BA 683
D15	8300635	**250**	BA 683	D21			
D17-	8300635	**250**	BA 683	D25	8300635	**250**	BA 683
D18							

C1-	4010271	10nF 10% 50V	C11	4010274	100nF -20+80% 25V
C4			C12	4010271	10nF 10% 50V
C8	4010274	100nF -20+80% 25V	C14-	4010271	10nF 10% 50V
C9-	4010271	10nF 10% 50V	C15		
C10					

L10	8021082	Coil 8.2µH 10%

BP1	8030124	Cer. filter 4.5MHz ±60KHz
BP2	8030173	Cer. filter 6.5MHz ±8KHz
BP9	8030033	Cer. filter 6.0MHz
BP10	8030309	Cer. filter 4.5MHz

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SW1	8008319	Submodul
SW2	8030316	OFW K3953M
SW3	8030317	OFW G9353M
SW4	8030147	OFW G3450

Other electrical parts like PCB 12, IF system B/G

PCB 14, 8008367 AV Switch (incl. PCB 6)

See page 3-8 regarding PCB 6)

IC1Δ	8341024	**150**	4066
IC2Δ-IC4Δ	8342347	**136**	TEA 6425
IC5Δ	8342349	**136**	TEA 5114A
IC6	8341747	**150**	TL 7705BCD
IC7Δ	8341024	**150**	4066
IC8Δ	8342346	**136**	GM 62093
IC9Δ	8341025	**150**	4094
IC10Δ	8342350	**136**	TDA 7314S
IC11Δ	8342346	**136**	GM 62093
IC12Δ	8341025	**150**	4094
IC13Δ*	8342276	**152**	83C524
IC14Δ	8341024	**150**	4066
IC15-IC21	8341022	**150**	4558
IC22-IC24	8341857	**151**	LM 339
IC25-IC34	8341022	**150**	4558
IC35Δ	8341024	**150**	4066
IC36	8341231	**151**	LF 347
IC37-IC38	8341857	**151**	LM 339
IC40Δ	8342397	**150**	MK 41T56

TR1	8320755	**51**	BC 847B
TR3-TR6	8320755	**51**	BC 847B
TR7	8320616	**51**	BC 858B
TR8	8320778	**51**	BC 858C
TR9	8320615	**51**	BC 848B
TR10Δ	8320856	**68**	2N 7002
TR11Δ	8320899	**68**	BSS 84
TR12Δ	8320856	**68**	2N 7002
TR14-TR19	8320811	**51**	BC 857B
TR20-TR27	8320755	**51**	BC 847B
TR29-TR30	8320755	**51**	BC 847B
TR35	8320755	**51**	BC 847B
TR36	8320497	**18**	BC 547B
TR37	8320755	**51**	BC 847B
TR41	8320755	**51**	BC 847B
TR42	8320503	**18**	BC 557B
TR43	8320497	**18**	BC 547B
TR44	8320811	**51**	BC 857B
TR45-TR47	8320755	**51**	BC 847B
TR51	8320552	**18**	BC 327-25
TR52	8320755	**51**	BC 847B
TR53	8320507	**18**	BC 337-25
TR54	8320811	**51**	BC 857B
TR55	8320552	**18**	BC 327-25
TR56	8320755	**51**	BC 847B
TR60	8320755	**51**	BC 847B
TR61	8320811	**51**	BC 857B
TR62	8320755	**51**	BC 847B
TR67	8320497	**18**	BC 547B
TR68	8321050	**19**	ZTX 788B
TR69-TR70	8320755	**51**	BC 847B
TR78-TR79	8320552	**18**	BC 327-25
TR80	8320755	**51**	BC 847B
TR81-TR82	8320811	**51**	BC 857B
TR83	8320755	**51**	BC 847B
TR85	8320811	**51**	BC 857B
TR88	8320755	**51**	BC 847B
TR89	8320811	**51**	BC 857B
TR90-TR91	8320755	**51**	BC 847B
TR92	8320811	**51**	BC 857B
TR93	8320755	**51**	BC 847B
TR94	8320811	**51**	BC 857B
TR95-TR96	8320755	**51**	BC 847B
TR98-TR100	8320755	**51**	BC 847B
TR101	8320811	**51**	BC 857B
TR102	8320755	**51**	BC 847B
TR104	8320552	**18**	BC 327-25
TR105-TR106	8320811	**51**	BC 857B
TR107	8320755	**51**	BC 847B
TR108	8320811	**51**	BC 857B
TR109	8321072	**19**	ZTX 690B
TR111	8342567	**23**	ZR 431C
TR112	8320552	**18**	BC 327-25
TR113	8320507	**18**	BC 337-25

D6-D11	8300482	**250**	LL 4148
D12	8300607	**250**	Z3.3V 5% 0.4W
D13-D14	8300482	**250**	LL 4148
D15	8300520	**224**	Z6.8V 5% 0.5W
D16-D17	8300482	**250**	LL 4148
D18	8300799	**250**	BAS 29
D19-D20	8300482	**250**	LL 4148
D21-D22	8300520	**224**	Z6.8V 5% 0.5W
D23-D24	8300606	**250**	LL 4448
D25	8300482	**250**	LL 4148
D28	8300606	**250**	LL 4448
D29	8300482	**250**	LL 4148
D30	8300606	**250**	LL 4448
D34-D35	8300482	**250**	LL 4148
D36-D49	8300606	**250**	LL 4448
D51-D56	8300606	**250**	LL 4448
D57	8300482	**250**	LL 4148
D58	8300636	**250**	Z7.5V 5% 0.5W
D59-D60	8300482	**250**	LL 4148
D61	8300636	**250**	Z7.5V 5% 0.5W
D62	8300482	**250**	LL 4148
D63-D64	8300562	**250**	Z5.6V 2% 0.5W
D65	8300644	**250**	Z6.2V 2% 0.5W

** Specially selected or adapted sample*

Δ indicates that static electricity may destroy the component

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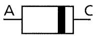
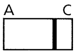
209	250						
							

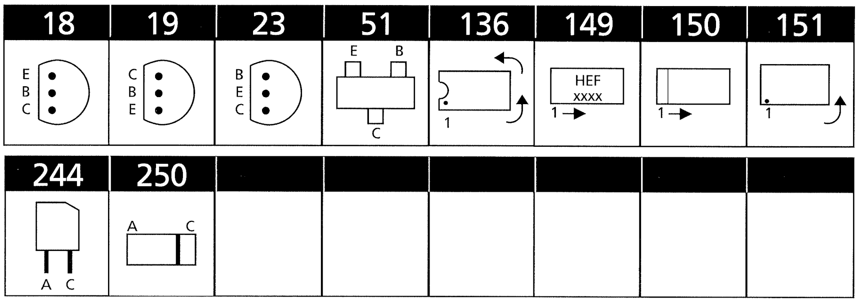
Resistors not referred to are standard, see page 3-22

D67	8300644	**250**	Z6.2V 2% 0.5W	D129-	8300482	**250**	LL 4148
D68	8300482	**250**	LL 4148	D134			
D77	8300914	**250**	SS 14	D135	8300636	**250**	Z7.5V 5% 0.5W
D79	8300482	**250**	LL 4148	D136-	8300482	**250**	LL 4148
D82	8300482	**250**	LL 4148	D138			
D84	8300482	**250**	LL 4148	D139	8300818	**250**	BAS 85
D92	8300482	**250**	LL 4148	D140	8300482	**250**	LL 4148
D94-	8300606	**250**	LL 4448	D141-	8300644	**250**	Z6.2V 2% 0.5W
D95				D148			
D96-	8300584	**250**	Z15V 5% 0.5W	D149-	8300482	**250**	LL 4148
D98				D150			
D99	8300914	**250**	SS 14	D151-	8300201	**209**	Z6.2V 5% 0.4W
D100	8300762	**250**	Z9.1V 2% 0.5W	D153			

R22-	5021391	75Ω 1% 1/4W	R484	5021493	3.9KΩ 1% 1/4W
R25			R491	5021225	10KΩ 1% 1/4W
R30-	5021496	11.8KΩ 1% 1/4W	R493	5021493	3.9KΩ 1% 1/4W
R33			R494-	5021074	680Ω 1% 1/4W
R34-	5021495	5.9KΩ 1% 1/4W	R495		
R37			R507	5012200	2.2KΩ 1% 1/4W
R70	5012240	100KΩ 1% 1/10W	R517-	5021372	5.36KΩ 1% 1/4W
R73	5012374	31.6KΩ 1% 1/10W	R518		
R77	5012298	22KΩ 1% 1/10W	R531	5011857	4.42KΩ 1% 1/4W
R80	5011599	49.9KΩ 1% 1/8W	R581-	5012238	33KΩ 1% 1/10W
R122	5011599	49.9KΩ 1% 1/8W	R582		
R170	5021484	100Ω 1% 1/4W	R609	5021482	5.6MΩ 1% 1/4W
R172	5021484	100Ω 1% 1/4W	R634-	5012200	2.2KΩ 1% 1/4W
R173	5021391	75Ω 1% 1/4W	R635		
R199	5021484	100Ω 1% 1/4W	R640	5021523	560Ω 1% 1/4W
R200	5021483	68Ω 1% 1/4W	R641-	5021483	68Ω 1% 1/4W
R219	5021391	75Ω 1% 1/4W	R642		
R228-	5021483	68Ω 1% 1/4W	R643	5021523	560Ω 1% 1/4W
R229			R661-	5021483	68Ω 1% 1/4W
R236-	5021391	75Ω 1% 1/4W	R662		
R237			R680	5011852	332Ω 1% 1/4W
R247	5021484	100Ω 1% 1/4W	R705-	5021511	470Ω 1% 1/4W
R249	5021484	100Ω 1% 1/4W	R708		
R254-	5021391	75Ω 1% 1/4W	R714-	5021511	470Ω 1% 1/4W
R261			R715		
R273-	5021370	28.7KΩ 1% 1/4W	R790	5021074	680Ω 1% 1/4W
R275			R791	5021523	560Ω 1% 1/4W
R282	5011631	1KΩ 1% 1/4W	R792	5021483	68Ω 1% 1/4W
R283-	5011857	4.42KΩ 1% 1/4W	R801-	5011903	180Ω 1% 1/4W
R284			R814		
R345-	5012350	27.4KΩ 1% 1/10W	R826	5021484	100Ω 1% 1/4W
R347			R835	5024001	2.2Ω 5% 1/8W
R354-	5021484	100Ω 1% 1/4W	R838-	5011631	1KΩ 1% 1/4W
R355			R840		
R368-	5021484	100Ω 1% 1/4W	R842	5011281	0.82Ω 5% 1/4W
R369			R845	5011631	1KΩ 1% 1/4W
R378-	5021484	100Ω 1% 1/4W	R846	5021524	47Ω 1% 1/4W
R379			R847-	5011853	158Ω 1% 1/4W
R466	5021074	680Ω 1% 1/4W	R848		
R471-	5021484	100Ω 1% 1/4W	R849	5021524	47Ω 1% 1/4W
R472			R850-	5021500	56Ω 1% 1/4W
R474	5021524	47Ω 1% 1/4W	R851		
R475-	5011853	158Ω 1% 1/4W	R852	5021524	47Ω 1% 1/4W
R476			R853	5011631	1KΩ 1% 1/4W
R482	5021225	10KΩ 1% 1/4W			

C1-C4	4000412	100pF 5% 50V
C5-C8	4000408	47pF 5% 50V
C9-C10	4000404	22pF 5% 50V
C11-C14	4000416	220pF 5% 50V
C17	4010274	100nF -20+80% 25V
C19-C26	4010274	100nF -20+80% 25V
C28-C37	4010274	100nF -20+80% 25V
C40-C41	4010237	1nF 20% 50V
C42	4000418	330pF 5% 50V
C43	4000417	270pF 5% 50V
C45	4010274	100nF -20+80% 25V
C46-C47	4010269	6.8nF 10% 50V
C50	4000423	820pF 5% 50V
C51	4000416	220pF 5% 50V
C52	4010274	100nF -20+80% 25V
C53	4010314	220nF -20+80% 25V
C54	4010273	47nF -20+80% 50V
C55	4010274	100nF -20+80% 25V
C56	4010237	1.0nF 20% 50V
C57-C58	4201163	10µF 20% 35V
C60-C63	4201163	10µF 20% 35V
C71	4010274	100nF -20+80% 25V
C73	4010274	100nF -20+80% 25V
C86	4000424	1nF 5% 50V
C87	4010314	220nF -20+80% 25V
C90-C91	4201163	10µF 20% 35V
C98	4010274	100nF -20+80% 25V
C99-C104	4201163	10µF 20% 35V
C105	4010274	100nF -20+80% 25V
C107	4010271	10nF 10% 50V
C108	4010237	1nF 20% 50V
C109	4010274	100nF -20+80% 25V
C110	4200525	22µF 20% 10V
C111-C113	4000420	470pF 5% 50V
C114-C130	4010237	1nF 20% 50V
C131	4010274	100nF -20+80% 25V
C132-C134	4010237	1nF 20% 50V
C135-C136	4000408	47pF 5% 50V
C137-C139	4010237	1nF 20% 50V
C140	4010274	100nF -20+80% 25V
C141	4000424	1nF 5% 50V
C147-C148	4010274	100nF -20+80% 25V
C149-C152	4000420	470pF 5% 50V
C153-C154	4000416	220pF 5% 50V
C155-C156	4000406	33pF 5% 50V
C157	4000287	220nF -20+80% 25V
C158	4000418	330pF 5% 50V
C159	4000287	220nF -20+80% 25V
C160	4000418	330pF 5% 50V
C161	4000287	220nF -20+80% 25V
C162	4000418	330pF 5% 50V
C163	4000287	220nF -20+80% 25V
C164	4000418	330pF 5% 50V
C165	4000287	220nF -20+80% 25V
C166	4000418	330pF 5% 50V
C167	4000287	220nF -20+80% 25V
C168	4000418	330pF 5% 50V
C169	4000287	220nF -20+80% 25V
C170	4000418	330pF 5% 50V
C171	4000287	220nF -20+80% 25V
C172	4000418	330pF 5% 50V
C173	4000287	220nF -20+80% 25V
C174	4000418	330pF 5% 50V
C175	4000287	220nF -20+80% 25V
C176	4000418	330pF 5% 50V
C181-C200	4010274	100nF -20+80% 25V
C209-C212	4130232	150nF 20% 63V
C215-C216	4100210	1.5nF 5% 63V
C219-C220	4000412	100pF 5% 50V
C221-C222	4010274	100nF -20+80% 25V
C223	4200525	22µF 20% 10V
C226	4000287	220nF -20+80% 25V
C227	4000418	330pF 5% 50V
C228	4000287	220nF -20+80% 25V
C229	4000418	330pF 5% 50V
C230	4000287	220nF -20+80% 25V
C231	4000418	330pF 5% 50V
C232	4000287	220nF -20+80% 25V
C233	4000418	330pF 5% 50V
C234	4010274	100nF -20+80% 25V
C237	4010274	100nF -20+80% 25V
C239	4010274	100nF -20+80% 25V
C241	4010274	100nF -20+80% 25V
C243	4010274	100nF -20+80% 25V
C244	4201174	2.2µF 20% 50V
C245-C246	4010274	100nF -20+80% 25V
C247	4201174	2.2µF 20% 50V
C250-C252	4200688	47µF 20% 50V
C254	4200688	47µF 20% 50V
C259	4201173	10µF 20% 50V
C262-C264	4200688	47µF 20% 50V
C265-C266	4201163	10µF 20% 35V
C267	4010274	100nF -20+80% 25V
C268	4201163	10µF 20% 35V
C270-C271	4201329	1000µF 20% 16V
C272	4000415	180pF 5% 50V
C273	4000424	1nF 5% 50V
C274	4010274	100nF -20+80% 25V
C277-C280	4201292	2.2µF 20% 50V
C283-C285	4010274	100nF -20+80% 25V
C286-C289	4201292	2.2µF 20% 50V
C299	4010274	100nF -20+80% 25V
C300-C301	4010166	100nF -20+80% 50V
C302-C303	4201163	10µF 20% 35V
C304	4010166	100nF -20+80% 50V
C501	4010274	100nF -20+80% 25V
C504	4000417	270pF 5% 50V
C505	4201188	220µF 20% 25V

⇨



Resistors not referred to are standard, see page 3-22

C506-	4000412	100pF 5% 50V	C533-	4201163	10µF 20% 35V
C511			C535		
C512	4010274	100nF -20+80% 25V	C536	4010274	100nF -20+80% 25V
C517-	4010274	100nF -20+80% 25V	C537	4000416	220pF 5% 50V
C518			C538	4010274	100nF -20+80% 25V
C519	4201163	10µF 20% 35V	C545-	4010274	100nF -20+80%25V
C521	4201163	10µF 20% 35V	C546		
C522	4000397	27pF 2% 50V	C547	4201188	220µF 20% 25V
C523	4201163	10µF 20% 35V	C548	4010271	10nF 10% 50V
C524	4000392	100pF 2% 50V	C549-	4010237	1nF 20% 50V
C525	4000397	27pF 2% 50V	C550		
C526	4201163	10µF 20% 35V	C551	4010314	220nF -20+80% 25V
C528	4010274	100nF -20+80% 25V	C556-	4010271	10nF 10% 50V
C529	4000424	1nF 5% 50V	C557		
C530	4000392	100pF 2% 50V	C558-	4010263	2.2nF 10% 50V
C531	4010237	1nF 20% 50V	C559		

L1-	8020821	Coil 2.2µH 5%	L10	8020907	Coil 47µH 10%
L2			L12	8020822	Coil 3.3µH 5%
L3-	8020822	Coil 3.3µH 5%	L206	8020966	Coil 10µH 2% 400mA
L5			L207	8014110	Coil 70µH
L6-	8020705	Coil 100µH 10%	L208	8020966	Coil 10µH 400mA
L9					

X1	8090181	Crystal 14.7456MHz	X2	8090193	Crystal 32.768KHz

B1	8700040	Battery lithium

P2-	7229141	Holder f/ribbon cable 10 pole
P5		
P6	7221121	Socket 16/16 pole
P7-	7229141	Holder f/ribbon cable 10 pole
P9		
P10	7221119	Socket 12/12 pole
P11	7221121	Socket 16/16 pole
P13-	7229141	Holder f/ribbon cable 10 pole
P14		
P15-	7221118	Socket 10/10 pole
P16		
P17	7211059	Socket 16 pole
P18	7221133	Socket 8/8 pole
P19	7221046	Socket 6/6 pole
P20	7221045	Socket 5/5 pole
P21-	7211068	Socket 21 pole
P23		
P24	7210906	Socket 16 pole
P61	7221064	Plug 9/9 pole
P84	7220134	Plug 2/2 pole

PCB 20, 8008334 Satellite

IC1-IC2	8341857	**136**	LM 339
IC5Δ-IC6Δ	8341025	**150**	4094
IC7Δ-IC8Δ	8341059	**150**	4052

IC9Δ	8342207	**151**	TDA 6151-5
IC10Δ	8342307	**136**	TDA 8740
IC11	8341098	**149**	LM 358

TR1-TR3	8320497	**18**	BC 547B
TR6-TR9	8320552	**18**	BC 327-25
TR13-TR14	8320755	**51**	BC 847B
TR17-TR18	8320755	**51**	BC 847B
TR20-TR21	8320755	**51**	BC 847B
TR23	8320503	**18**	BC 557B
TR25-TR27	8320811	**51**	BC 857B
TR28	8321064	**23**	BF 420
TR30	8321072	**19**	ZTX 690B
TR31-TR34	8321073	**19**	ZTX 790A

TR35	8320811	**51**	BC 857B
TR36-TR37	8320755	**51**	BC 847B
TR38	8320497	**18**	BC 547B
TR39	8320811	**51**	BC 857B
TR40	8320497	**18**	BC 547B
TR41-TR42	8320503	**18**	BC 557B
TR43	8320811	**51**	BC 857B
TR44	8320497	**18**	BC 547B
TR45	8320755	**51**	BC 847B
TR46	8320503	**18**	BC 557B
TR47	8320755	**51**	BC 847B
TR48	8320497	**18**	BC 547B
TR49	8320755	**51**	BC 847B

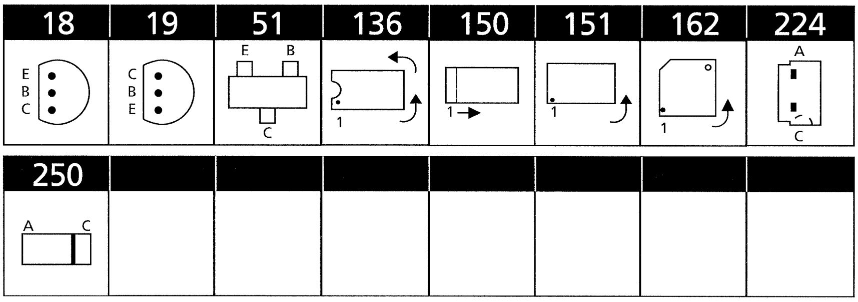
D3-D8	8300482	**250**	LL 4148
D9	8300905	**250**	Z30V 2% 0.5W
D10-D17	8300482	**250**	LL 4148
D23	8300562	**250**	Z5.6V 2% 0.5W
D24	8300563	**250**	Z5.1V 2% 0.5W
D25-D27	8300644	**250**	Z6.2V 2% 0.5W
D28-D29	8300914	**250**	SS 14

D32	8300606	**250**	LL 4448
D33-D36	8300482	**250**	LL 4148
D38-D41	8300482	**250**	LL 4148
D42	8300607	**250**	Z3.3V 5% 0.4W
D43	8300687	**250**	Z2.7V 5% 0.4W
D48	8300907	**244**	GF1B 100V

R4	5011755	1Ω 2% 1/4W
R7-R9	5011755	1Ω 2% 1/4W
R10	5021501	390Ω 1% 1/4W
R15	5011853	158Ω 1% 1/4W
R102-R103	5021226	100KΩ 1% 1/4W
R108-R109	5021374	42.2KΩ 1% 1/4W
R113	5021359	24.9KΩ 1% 1/4W
R134	5021511	470Ω 1% 1/4W
R135	5021226	100KΩ 1% 1/4W
R136	5011631	1KΩ 1% 1/4W
R137	5021226	100KΩ 1% 1/4W
R138	5012350	27.4KΩ 1% 1/10W
R139	5012391	52.3KΩ 1% 1/10W
R140-R141	5021334	3.32KΩ 1% 1/4W
R142-R143	5011517	22Ω 5% 1W
R148	5020714	0.1Ω 10% 0.4W
R149	5021511	470Ω 1% 1/4W
R150	5021520	10Ω 1% 1/4W
R151	5021372	5.36KΩ 1% 1/4W
R152-R153	5021483	68Ω 1% 1/4W
R154	5021494	4.64KΩ 1% 1/4W
R155	5021520	10Ω 1% 1/4W

R156-R157	5021522	1.2Ω 5% 1/4W
R158	5020714	0.1Ω 10% 0.4W
R168	5021501	390Ω 1% 1/4W
R171	5021501	390Ω 1% 1/4W
R172	5020547	68Ω 5% 2W
R173	5012169	220KΩ 1% 1/4W
R174	5021226	100KΩ 1% 1/4W
R177	5021522	1.2Ω 5% 1/4W
R186	5021494	4.64KΩ 1% 1/4W
R191	5021494	4.64KΩ 1% 1/4W
R195	5011852	332Ω 1% 1/4W
R196	5011631	1KΩ 1% 1/4W
R199-R200	5021528	18KΩ 1% 1/4W
R201	5021226	100KΩ 1% 1/4W
R203	5021511	470Ω 1% 1/4W
R206	5021334	3.32KΩ 1% 1/4W
R210-R211	5021382	5.6KΩ 1% 1/4W
R212-R213	5021492	2.7KΩ 1% 1/4W
R214	5021074	680Ω 1% 1/4W
R216	5021334	3.32KΩ 1% 1/4W
R217	5012175	43.2KΩ 1% 1/4W
R218	5021523	560Ω 1% 1/4W
R223	5021225	10KΩ 1% 1/4W

Δ indicates that static electricity may destroy the component



Resistors not referred to are standard, see page 3-22

C4-	4000400	10pF 5% 50V
C6		
C8	4000400	10pF 5% 50V
C9	4000406	33pF 5% 50V
C10	4000410	68pF 5% 50V
C11	4000404	22pF 5% 50V
C12	4000410	68pF 5% 50V
C13-	4000412	100pF 5% 50V
C15		
C16	4000418	330pF 5% 50V
C17	4000420	470pF 5% 50V
C18	4000418	330pF 5% 50V
C19-	4010267	4.7nF 10% 50V
C20		
C21-	4010271	10nF 10% 50V
C22		
C23	4010272	22nF -20+80%50V
C24	4010273	47nF -20+80% 50V
C25-	4010274	100nF -20+80% 25V
C28		
C29	4010216	22nF 10% 100V
C30-	4010274	100nF -20+80% 25V
C31		
C32	4010263	2.2nF 10% 50V
C33-	4010274	100nF -20+80% 25V
C35		
C36-	4010314	220nF -20+80% 25V
C37		
C38	4010263	2.2nF 10% 50V
C39	4010216	22nF 10% 100V
C40-	4010314	220nF -20+80% 25V
C42		
C44	4010216	22nF 10% 100V
C47-	4010274	100nF -20+80% 25V
C48		
C49	4130235	47nF 20% 63V
C50	4201256	470µF 20% 25V
C51	4200628	100µF 20% 16V
C52	4201171	1µF 20% 50V
C53	4201173	10µF 20% 50V
C55	4010216	22nF 10% 100V
C56-	4200824	22µF 20% 50V
C59		
C61-	4201171	1µF 20% 50V
C63		
C64	4201256	470µF 20% 25V
C66	4201173	10µF 20% 50V
C69	4201173	10µF 20% 50V
C70	4201174	2.2µF 20% 50V
C76	4201256	470µF 20% 25V
C77	4000411	82pF 5% 50V
C80	4000412	100pF 5% 50V
C83	4100301	1nF 2.5% 63V
C84	4201171	1µF 20% 50V
C85	4201173	10µF 20% 50V
C86	4201171	1µF 20% 50V
C87	4010274	100nF -20+80% 25V
C88	4010314	220nF -20+80% 25V
C89	4200628	100µF 20% 16V
C90	4010237	1nF 20% 50V
C91	4010316	100nF 10% 25V
C92	4010273	47nF -20+80% 50V
C93-	4010316	100nF 10% 25V
C94		
C95	4201143	10µF 20% 25V Bipolar
C97-	4010274	100nF -20+80% 25V
C99		
C101	4010314	220nF -20+80% 25V
C972-	4130328	33nF 5% 63V
C974		
C975	4130473	120nF 5% 63V

L2-	8021090	Coil 6.8µH 5%
L3		
L5	8020907	Coil 47µH 10%
L6	8022344	Coil 600µH
L8	8020759	Coil 1mH 10%
L9	8020808	Coil 330µH 10%
L10-	8021082	Coil 8.2µH 10%
L11		

BP1	8030283	Cer. filter 5.80MHz
BP2	8030284	Cer. filter 6.5MHz
BP3	8030285	Cer. filter 6.65MHz
BP6	8030286	2 x cer. filter 8.28MHz
BP8	8030287	2 x cer. filter 8.10MHz
BP10	8030288	2 x cer. filter 7.92MHz
BP11	8030289	2 x cer. filter 7.74MHz
BP12	8030290	2 x cer. filter 7.56MHz
BP13	8030291	2 x cer. filter 7.38MHz
BP14	8030292	2 x cer. filter 7.20MHz
BP15	8030293	2 x cer. filter 7.02MHz

TU1	8050149	Tuner SXT2001CDI

P25	7221121	Plug 16/16 pole
P98	7500296	Contact pin

PCB 30, 8008335 Dolby Surround

IC1Δ	8341058	**150**	4051	IC7	8342238	**151**	TDA 7318D
IC2Δ	8341059	**150**	4052	IC8	8342387	**162**	LV 1001MA
IC3Δ-	8341173	**136**	PCF 8574	IC9	8341812	**151**	LM 393
IC4Δ				IC10-	8341022	**150**	4558
IC5	8341510	**136**	SSM-2126	IC15			
IC6Δ	8341861	**151**	TMS4C1024 DRAM				

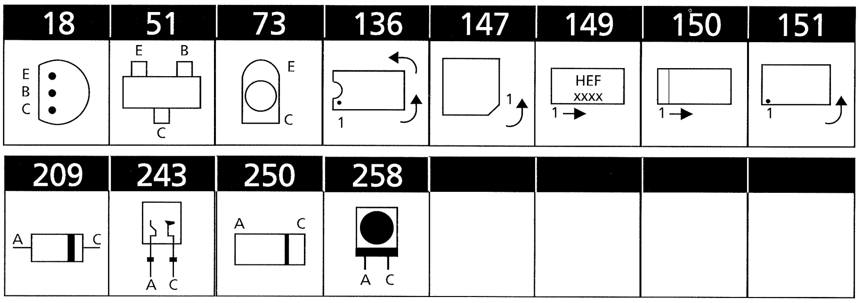
TR1	8320595	**18**	BC337-40	TR10	8320497	**18**	BC 547B
TR2-	8321080	**51**	FMMT 491A	TR11	8320811	**51**	BC 857B
TR5				TR12	8320755	**51**	BC 847B
TR6-	8320811	**51**	BC 857B	TR13	8320811	**51**	BC 857B
TR7				TR14	8321073	**19**	ZTX 790A
TR8-	8320755	**51**	BC 847B				
TR9							

D1-	8300482	**250**	LL 4148	D13-	8300914	**250**	SS 14
D9				D14			
D10	8300520	**224**	Z6.8V 5%	D15-	8300482	**250**	LL 4148
D11	8300661	**250**	Z4.3V 2%	D16			
D12	8300762	**250**	Z9.1V 2% 0.5W	D29	8300482	**250**	LL 4148

R11	5013012	137KΩ 1% 1/10W	R150	5012202	4.7Ω 5% 1/4W
R12-	5011858	7.68KΩ 1% 1/4W	R151-	5012240	100KΩ 1% 1/10W
R13			R152		
R145	5011993	69.8KΩ 1% 1/8W	R153	5020875	10MΩ 5% 1/8W
R146	5012200	2.2KΩ 1% 1/4W	R154	5021513	0.47Ω 5% 1/4W
R147	5012202	4.7Ω 5% 1/4W	R156	5021532	270Ω 1% 1/4W

C1-	4000414	150pF 5% 50V	C71	4100308	2.7nF 5% 63V
C5			C72-	4130265	10nF 10% 63V
C6-	4000290	22nF 10% 50V	C74		
C7			C75-	4130304	22nF 10% 63V
C8-	4000326	680pF 5% 50V	C78		
C9			C79-	4130306	100nF 10% 63V
C10-	4000405	27pF 5% 50V	C83		
C11			C84-	4130307	150nF 10% 63V
C12	4000409	56pF 5% 50V	C87		
C13	4000410	68pF 5% 50V	C88-	4130308	220nF 10% 63V
C14	4000415	180pF 5% 50V	C90		
C15-	4000420	470pF 5% 50V	C91	4130347	5.6nF 10% 63V
C16			C92	4200510	10µF 20% 16V
C17	4000326	680pF 5% 50V	C93-	4200628	100µF 20% 16V
C18-	4000424	1nF 5% 50V	C95		
C23			C96	4200672	22µF 20% 16V Bipolar
C24	4000461	1nF 5% 50V	C97-	4200916	4.7µF 20% 25V
C25	4010274	100nF -20+80% 25V	C100		
C26	4010242	3.9nF 10% 50V	C101	4201143	10µF 20% 25V Bipolar
C27	4010173	4.7nF 10% 50V	C102-	4201163	10µF 20% 35V
C28-	4010272	22nF -20+80% 50V	C106		
C29			C107	4201165	22µF 20% 10V
C30-	4010274	100nF -20+80% 25V	C108	4010274	100nF -20+80% 25V
C54			C109	4201165	22µF 20% 10V
C55	4010175	33nF 10% 50V	C110-	4201188	220µF 20% 25V
C56-	4010314	220nF -20+80% 25V	C111		
C57			C112-	4200711	1000µF -20+80% 10V
C58	4010315	22nF 10% 25V	C119		
C59-	4010323	1µF -20+80% 16V	C120	4200704	470µF 20% 25V
C60			C121-	4200916	4.7µF 20% 25V
C61-	4130309	330nF 10% 63V	C133		
C64			C134	4340034	7.5-50pF
C65	4010339	68nF 10% 50V	C135	4010274	100nF -20+80% 25V
C66	4010340	150nF 10% 25V	C136-	4100308	2.7nF 5% 63V
C67-	4000351	1.5nF 5% 50V	C137		
C68			C138-	4130265	10nF 10% 63V
C69	4100210	1.5nF 5% 63V	C139		
C70	4100239	4.7nF 5% 63V	C140	4200628	100µF 20% 16V

Δ indicates that static electricity may destroy the component



Resistors not referred to are standard, see page 3-22

L1-	8020916	Coil 47µH 5% 450mA	L3	8021031	Coil 47µH 1.4A
L2					

T1	8014110	Transformer 70µH

X1	8090192	Crystal 8MHz

P26	7210739	Socket 16 pole
P53-	7210518	DIN 8 pole
P56		

PCB 31, 8007809 Nicam

IC1	8340790	**136**	4558	IC5	8341225	**136**	LM 3578
IC2	8341724	**147**	SAA 7322	IC6	8341368	**136**	TL 026CP
IC3Δ	8341308	**136**	74HC4053	IC7	8341754	**147**	CF 70088
IC4	8340790	**136**	4558				

TR3	8320595	**18**	BC 337-40	TR4	8320615	**51**	BC 848B

D1	8300817	**209**	1N 5819	D3-	8300482	**250**	LL 4148
D2	8300639	**250**	Z12 2%	D4			

R1	5012154	1KΩ 1% 1/8W	R22-	5011557	10KΩ 1% 1/8W
R3	5020759	0.27Ω 5% 1/4W	R24		
R4	5011994	4.02KΩ 1% 1/8W	R25	5012145	3.83KΩ 1% 1/8W
R10	5021301	10KΩ 1% 1/8W	R26	5012144	29.4KΩ 1% 1/8W
R11-	5021398	16.9KΩ 1% 1/8W	R27	5011557	10KΩ 1% 1/8W
R12			R28	5012144	29.4KΩ 1% 1/8W
R13-	5021368	162KΩ 1% 1/8W	R29	5012145	3.83KΩ 1% 1/8W
R14			R31	5020809	10Ω 10% 0.4W
R17-	5011557	10KΩ 1% 1/8W	R46	5011877	5.11KΩ 1% 1/8W
R19			R48	5011877	5.11KΩ 1% 1/8W
R20-	5021367	47.5KΩ 1% 1/8W	R49	5020801	2.74KΩ 1% 1/4W
R21			R50	5011792	4.75KΩ 1% 1/8W

C1	4200760	220µF -20+50% 16V	C20	4010209	47nF 10% 50V
C2	4200952	47µF -20+50% 25V	C21	4000284	330pF 5% 50V
C3	4000345	1.0nF 5% 50V	C22	4000286	470pF 5% 50V
C4	4000233	220pF 5% 50V	C23	4000326	680pF 5% 50V
C5-	4200512	1µF 20% 50V	C24	4000219	10pF ±0.5pF 50V
C8			C26	4010157	10nF 10% 50V
C9	4130262	22nF 20% 63V	C28	4000239	33pF 5% 50V
C10	4000290	22nF -20+80% 50V	C29	4130230	100nF 20% 63V
C11	4130268	10nF 5% 63V	C30	4010157	10nF 10% 50V
C12-	4010220	100nF 10% 50V	C31	4000290	22nF -20+80% 50V
C13			C32-	4000326	680pF 5% 50V
C14-	4010209	47nF 10% 50V	C34		
C15			C35	4010166	100nF -20+80% 50V
C16	4000284	330pF 5% 50V	C38	4010166	100nF -20+80% 50V
C17	4000286	470pF 5% 50V	C39	4010157	10nF 10% 50V
C18	4130268	10nF 5% 63V	C40	4000280	68pF 5% 50V
C19	4000326	680pF 5% 50V	C41	4000345	1nF 5% 50V

Δ indicates that static electricity may destroy the component

⇨

C42	4010157	10nF 10% 50V	C50-	4000239	33pF 5% 50V
C43-	4010166	100nF -20+80% 50V	C51		
C44			C52	4200525	22µF 20% 10V
C45	4000290	22nF -20+80% 50V	C53	4010157	10nF 10% 50V
C46	4010157	10nF 10% 50V	C54-	4000219	10pF ±0.5pF 50V
C47-	4010171	1.5nF 10% 50V	C56		
C48			C57	4000290	22nF -20+80% 50V
C49	4200511	100µF 20% 10V	C58	4000267	3pF ±0.25pF 50V

L1	8020759	Coil 1mH 10%	L6	8020552	Coil 10µH 10%
L2	8020672	Coil 33µH 10%			
L3-	8020649	Coil 3.9µH 5%			
L5					

X1	8090148	Crystal 16.384MHz

P94	7220713	Socket 6/6 pole	P96	7220712	Socket 5/5 pole
P95	7220710	Socket 3/3 pole	P97	7220711	Socket 4/4 pole

PCB 41, 8008322 Format Optimize

PCB 57, 8008372 Operation Panel

P75	7211056	Socket 10 pole

PCB 58, 8008373 Display & IR

IC1Δ	8341025	**150**	4094B	IC4Δ	8342297	**150**	74HC147
IC2	8341165	**151**	U2506B	IC5	8341098	**150**	LM 358
IC3	8341857	**151**	LM 339	IC6Δ	8341036	**149**	4071

TR1-	8320755	**51**	BC 847B	TR11	8320755	**51**	BC 847B
TR2				TR15-	8320755	**51**	BC 847B
TR4-	8320740	**51**	BF 840	TR16			
TR5				TR18	8320755	**51**	BC 847B
TR8-	8320755	**51**	BC 847B	TR20	8320755	**51**	BC 847B
TR9							

PE1	8330338	**73**	BPW 16N-AS12

D1	8300482	**250**	LL 4148	D19-	8300482	**250**	LL 4148
D2	8330150	**243**	TLSH 4290	D24			
D3-	8300482	**250**	LL 4148	D25-	8330323	**258**	IR detector
D6				D26			

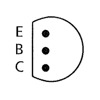
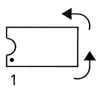
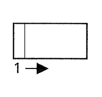
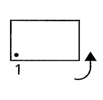
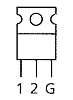
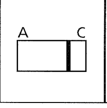
DP1Δ	8330337	Dotmatrix display
DP2	8330346	LED display

R93	5021511	470Ω 1% 1/4W	R94	5021512	220Ω 1% 1/4W

C1-	4000404	22pF 5% 50V	C20-	4200403	100µF 20% 25V
C4			C21		
C5-	4000420	470pF 5% 50V	C22	4200525	22µF 20% 10V
C7			C23	4200515	4.7µF 20% 25V
C8	4000424	1nF 5% 50V	C24	4200517	2.2µF 20% 50V
C9	4010237	1nF 20% 50V	C25-	4200525	22µF 20% 10V
C10	4000416	220pF 5% 50V	C26		
C11-	4010271	10nF 10% 50V	C27-	4010237	1nF 20% 50V
C13			C30		
C14	4010274	100nF -20+80% 25V	C31-	4010274	100nF -20+80% 25V
C15	4010271	10nF 10% 50V	C32		
C16-	4010274	100nF -20+80% 25V	C33-	4000412	100pF 5% 50V
C19			C34		

Δ indicates that static electricity may destroy the component

⇨

18	136	150	151	207	250		
							

Resistors not referred to are standard, see page 3-22

C35	4010274	100nF -20+80% 25V	C39	4200403	100µF 20% 25V
C36	4000416	220pF 5% 50V	C40	4010271	10nF 10% 50V
C37-C38	4010274	100nF -20+80% 25V	C41	4010274	100nF -20+80% 25V

L1-L2	8020768	Coil 455KHz	L3	8020910	Coil 220µH
			L4	8021000	Coil 3.3µH 20%

P63	7221119	Socket 12/12 pole

CP1-C10	7530128	Contact pin

PCB 59, 8008374 Camcorder Interface & Headphone

IC1	8341231	**151**	LF 347

TR1-TR4	8320497	**18**	BC 547B	TR12-TR13	8320503	**18**	BC 557B
TR6-TR7	8320497	**18**	BC 547B	TR14	8320507	**18**	BC 337-25
TR9-TR10	8320497	**18**	BC 547B	TR15	8320552	**18**	BC 327-25

D1-D4	8300482	**250**	LL 4148	D7-D8	8300644	**250**	Z6.2V 2% 0.5W
D5-D6	8300562	**250**	Z5.6V 2% 0.5W				

R1-R3	5011631	1KΩ 1% 1/4W	R66-R69	5021524	47Ω 1% 1/4W
R4	5021520	10Ω 1% 1/4W	R70-R71	5021521	82Ω 1% 1/4W
R5-R6	5011859	8.25KΩ 1% 1/4W	R72-R73	5021391	75Ω 1% 1/4W
R12	5021511	470Ω 1% 1/4W	R74	5021509	84.5Ω 1% 1/4W
R16	5011631	1KΩ 1% 1/4W	R78-R81	5021484	100Ω 1% 1/4W
R21-R22	5021492	2.7KΩ 1% 1/4W	R82-R83	5021508	47KΩ 1% 1/4W
R30-R31	5021511	470Ω 1% 1/4W	R84-R89	5021511	470Ω 1% 1/4W
R59-R63	5021226	100KΩ 1% 1/4W			
R64-R65	5021372	5.36KΩ 1% 1/4W			

C1-C2	4010263	2.2nF 10% 50V	C19	4010263	2.2nF 10% 50V
C3	4010237	1nF 20% 50V	C20-C21	4010314	220nF 20+80% 25V
C4	4010315	22nF 10% 25V	C22-C25	4200517	2.2µF 20% 50V
C5-C10	4010274	100nF -20+80% 25V	C26-C27	4200688	47µF 20% 50V
C11	4010237	1nF 20% 50V	C29	4010263	2.2nF 10% 50V
C12-C14	4010274	100nF -20+80% 25V	C30	4200688	47µF 20% 50V
C16-C18	4010274	100nF -20+80% 25V			

L1- L2	8020916	Coil 47µH 5% 450mA			
P1 P3	7210802 3169103	Socket headphone Socket panel	P64	7221121	Socket 16/16 pole

PCB 60, 8008375
Mains Distribution

IC1-IC2	8330295	**136** K3021PG			
ST1- ST2	8300320 3152902	**207** BTB 06 Holder			
C1	4130569	470nF 20% 250V	C2	4130505	100nF 20% 250V
L1	8021036	Coil 100µH			
F1	6600121 7500223	Fuse 3.15AT Fuse holder			
T1	8022295	Coil 2 x 0.4mH	T2	8022328	Coil 2 x 30mH
P65 P66 P67	7219083 7220897 7221057	Socket 2 pole Socket 2/2 pole Socket 2/3 pole	P68 P69	7221149 7221077	Socket 2/2 pole Socket 4/4 pole
S1	7450094	Mains switch			

PCB 80, 8008337 Motor Stand Control

IC1	8341041	**150** LM 324	IC2	8342508	**136** L 2720
TR1- TR4	8320497	**18** BC 547B			
D5	8300563	**250** Z5.1V 2% 0.5W			
R1- R2	5012284	261KΩ 1% 1/8W	R9- R12	5011281	0.82Ω 5% 1/4W
R3- R4	5011599	49.9KΩ 1% 1/8W	R13- R16	5011599	49.9KΩ 1% 1/8W
R7- R8	5011603	787KΩ 1% 1/8W	R45- R46	5011281	0.82Ω 5% 1/4W
C1	4010166	100nF -20+80% 50V	C9	4000287	220nF -20+80% 25V
C2	4201173	10µF 20% 50V	C10	4010166	100nF -20+80% 50V
C3- C6	4000287	220nF -20+80% 25V	C12	4130526	100nF 5% 63V
C7- C8	4000241	100pF 5% 50V			
F1	6600142	Fuse 630mAT			
L1	8020916	Coil 47µH 5% 450mA			
P180	7221045	Socket 5/5 pole	P181	7211054	Socket 6 pole

PCB 81, 8008338 Motor Stand

Set of modules

1 set of modules consistss of PCB1-PCB2-PCB4-PCB6-PCB12- PCB14-PCB41
and mechanical pos. no. 9067

8008376	For system B/G
8008377	For system I
8008380	For system B/G/L/L'
8008379	For system B/G/L/L'/I
8008378	For system B/G/D/K/M/I

Standard resistors
Resistors 5% 1/2W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033	5011047		5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7	5011612	5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5010255	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035	5010036	5011065	5011078	
5.6		5011010	5011023	5011041		5011066	5011079	
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3	5011860	5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010904	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

Resistors 5% 1/8W

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3		5011347	5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011817	5011157	5011457	5011372	5020876	
4.7	5011363	5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

Resistors SMD 2% 1/8W
SMD 5% 1/8W

Glue dots, approx. 200, part no. 3181932

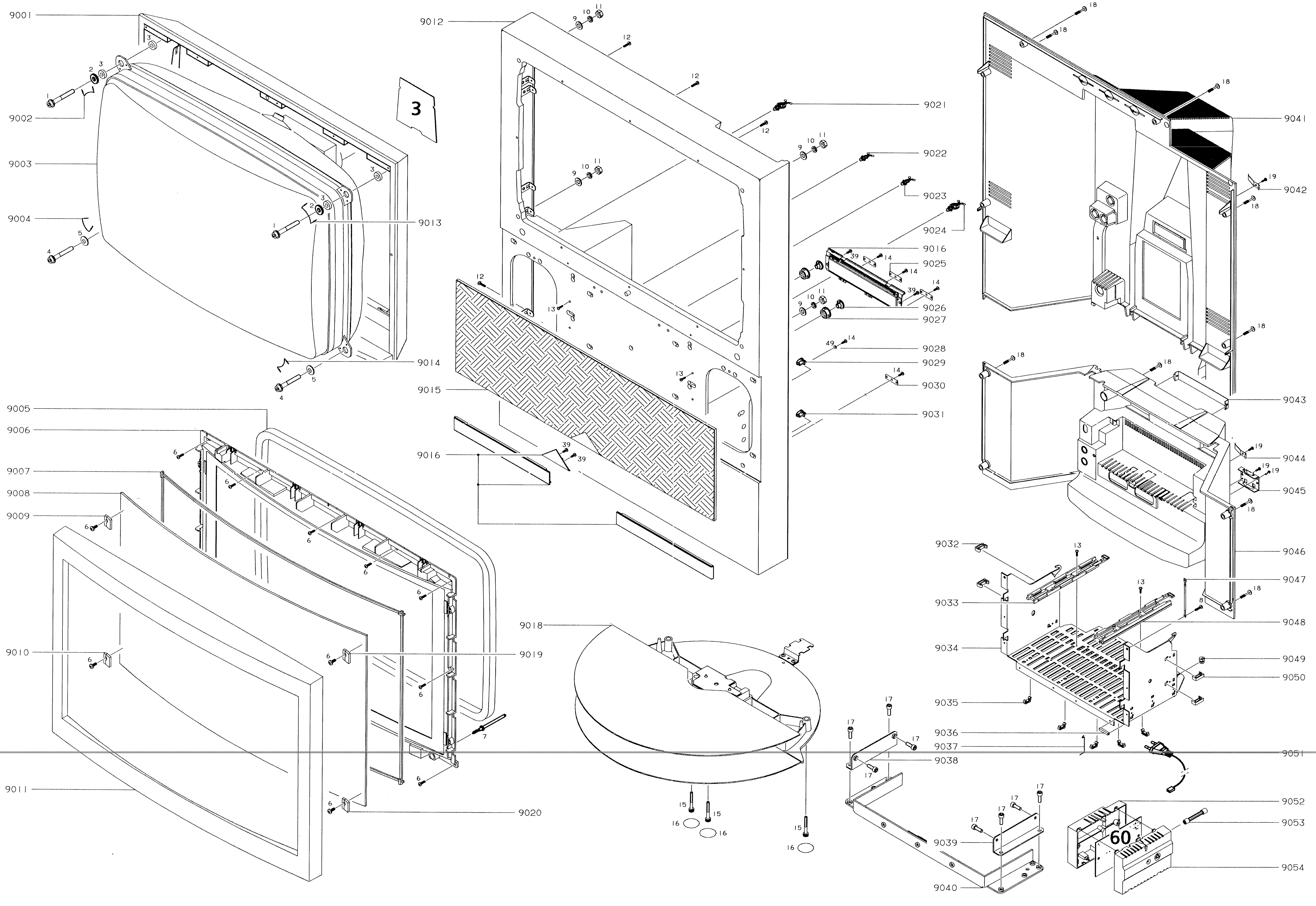
	5%	2%	2%	2%	2%	2%	5%	2%
	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	

Resistors SMD 5% 1/10W

Glue dots, approx. 200, part no. 3181932

	x1	x10	x100	x1k	x10k	x100k	x1M	x10M
0.0	6000072							
1.0		5011920	5011932	5011944	5011956	5011968	5011980	5012275
1.2	5012326	5011921	5011933	5011945	5011957	5011969	5012267	
1.5	5012235	5011922	5011934	5011946	5011958	5011970	5012268	
1.8		5011923	5011935	5011947	5011959	5011971	5011989	
2.2		5011924	5011936	5011948	5011960	5011972	5012220	
2.7		5011925	5011937	5011949	5011961	5011973	5012269	
3.3		5011926	5011938	5011950	5011962	5011974	5012261	
3.9		5011927	5011939	5011951	5011963	5011975	5012270	
4.7		5011928	5011940	5011952	5011964	5011976	5012271	
5.6		5011929	5011941	5011953	5011965	5011977	5012272	
6.8		5011930	5011942	5011954	5011966	5011978	5012273	
8.2		5011931	5011943	5011955	5011967	5011979	5012274	

LIST OF MECHANICAL PARTS
Chassis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Cabinet

9001	3320236	Frame
9002	3152949	Holder f/degaussing coil
9003	8200104	Picture tube
	7510047	Ground current
	2810189	Spring f/ground current
	2816275	Clamp f/ground current
	8022341	Degaussing coil
	3152626	Cable holder f/degaussing coil 3.6 x 290mm
	6270648	EHT cable
9004	3152949	Holder f/degaussing coil
9005	3950055	Profile
9006	3320237	Frame f/contrast screen
9007	3950056	Profile
9008	3451367	Contrast screen
9009	3031484	Plate
9010	3031484	Plate
9011	3320238	Frame
9012*	3320272	Wall, metallic grey
	3320178	Wall, pearly black
	3320177	Wall, pearly green
	3320250	Wall, pearly red
	3320235	Wall, pearly blue
9013	3152949	Holder f/degaussing coil
9014	3152949	Holder f/degaussing coil
9015	3320276	Loudspeaker panel, metallic grey
	3320275	Loudspeaker panel, pearly black
	3320274	Loudspeaker panel, pearly green
	3320273	Loudspeaker panel, pearly red
	3320239	Loudspeaker panel, pearly blue
9016	**	Set of profiles, cassette flap and triangle

**	Pearly blue	Pearly red	Pearly green	Pearly black	Metallic grey
VHS/PAL/SECAM/DS	3164932	3164964	3164996	3164997	3164998
VHS/PAL/SECAM	3164854	3162290	3162350	3162351	3162406
VHS/PAL/DS	3164991	3164992	3164993	3164994	3164995
VHS/PAL	3164980	3162407	3162408	3162409	3162410

9018	3458903	Base cover plate
9019	3031484	Plate
9020	3031484	Plate
9021	3152828	Wire holder
9022	3152827	Wire holder
9023	3152827	Wire holder
9024	3152828	Wire holder
9025	2816285	Spring
9026	2930120	Rubber bushing
9027	2930119	Bushing
9028	2816285	Spring
9029	3152952	Holder f/VTR
9030	2816285	Spring
9031	3152952	Holder f/VTR
9032	3152995	Wire holder
9033	3152964	Guide rail, left
9034	3152996	Holder f/chassis
9035	3152986	Wire holder
9036	3950048	Profil
9037	2816275	Ground spring
9038	3152950	Holder
9039	3152950	Holder
9040	3454572	Frame
9041	3430654	Back cover, upper
9042	3152960	Holder f/scart plug
9043	3152957	Cable holder
9044	3152960	Holder f/scart plug
9045	3152958	Cable holder
9046	3430629	Back cover, lower
9047	6032951	Wire
9048	3152963	Guide rail, right
9049	2938277	Wire holder, rubber

9050	3152995	Wire holder
9051	6100325	Mains lead w/filter
	6100324	Mains lead AUS
9052	3152954	Holder f/PCB 60
9053	2776404	Push button f/main switch
9054	3152953	Lid f/PCB 60

03Modul	8008364	PCB 3, Video Output

60Modul	8008375	PCB 60, Mains Distribution

Survey of screws etc.

1	2045001	Screw 8 x 60mm
2	2622497	Washer
3	2930121	Bushing
4	2045002	Screw 8 x 55mm
5	2622498	Washer
6	2019007	Screw 4 x 16mm
7	2052000	Screw 5 x 5.8/4.9 x 63mm
8	2019020	Screw 4 x 10mm
9	2622003	Washer
10	2624065	Spring washer
11	2380156	Nut
12	2015163	Screw 4 x 20mm
13	2015156	Screw 3.5 x 12mm
14	2019022	Screw 4 x 8mm
15	2046037	Screw 6 x 40mm
16	3947565	Wafer
17	2046039	Screw 6 x 18mm
18	2021012	Screw 4 x 25mm
19	2013137	Screw 3 x 10mm
39	2011058	Screw 2.5 x 5mm
40	2622024	Washer

*
Lacquer code nos. for Wall 9012

Grey - silver metal Dupont code no. AB BO941 with clear lacquer
Green - pearl metal Dupont code no. AB 7S 103 with clear lacquer
Black - black pearl Dupont code no. AB HO 697 with clear lacquer
Red - violet pearl Dupont code no. AB 3S 104 with clear lacquer
Blue - violet pearl Dupont code no. AB BO944 with clear lacquer

El-Chassis

9060	3164946	Cover f/display
9061	2776398	Set of buttons
9062	2572049	Spacer
9063	3131349	House f/display
9064	3152992	Service strap
9065	3152970	Holder f/PCB's
9066	3152985	Holder f/positioner
9067	3320240	Frame f/chassis
9068	3152992	Service strap
9069	3152969	Holder f/PCB's

01Modul	8008323	PCB 1, Tuner & IF system B/G
	8008324	PCB 1, Tuner & IF system I
	8008327	PCB 1, Tuner & IF system B/G/L/L'
	8008326	PCB 1, Tuner & IF system B/G/L/L'/I
	8008325	PCB 1, Tuner & IF system B/G/D/K/M/I
		(PCB 12 is part of PCB 1)

02Modul	8008363	PCB 2, Video/Chroma & Teletext (incl. PCB 41)

04Modul	8008365	PCB 4, Power Supply
0401	3358315	Heat sink
0402	2816195	Spring clip
0403	2816195	Spring clip
0404	2816154	Spring clip
0405	3358315	Heat sink

05Modul	8008366	PCB 5, Deflection & EHT
0501	3358315	Heat sink
0502	2816195	Spring clip
0503	2816154	Spring clip
0504	2816195	Spring clip
0505	3358315	Heat sink
05T1	8014136	Transformer EHT
	6270649	Focus cable, long
	6270650	Focus cable, short

06Modul	8008368	PCB 6, Main Microcomputer
		(See page 3-8 regarding PCB 6)

12Modul	8008328	PCB 12, IF system B/G
	8008329	PCB 12, IF system I
	8008332	PCB 12, IF system B/G/L/L'
	8008331	PCB 12, IF system B/G/L/L'/I
	8008330	PCB 12, IF system B/G/D/K/M/I

14Modul	8008367	PCB 14, AV Switch (incl. PCB 6)
		(see page 3-8 regarding PCB 6)
1401	3302493	Screen
1402	3162339	Lid
1403	3152965	Holder

20Modul	8008334	PCB 20, Satellite

30Modul	8008335	PCB 30, Dolby Surround
3001	3152967	Holder
30P53- 30P56	7210518	DIN 8 pole

31Modul	8007809	PCB 31, Nicam

40Modul	8008336	PCB 40, Picture in Picture

57Modul	8008372	PCB 57, Operation Panel

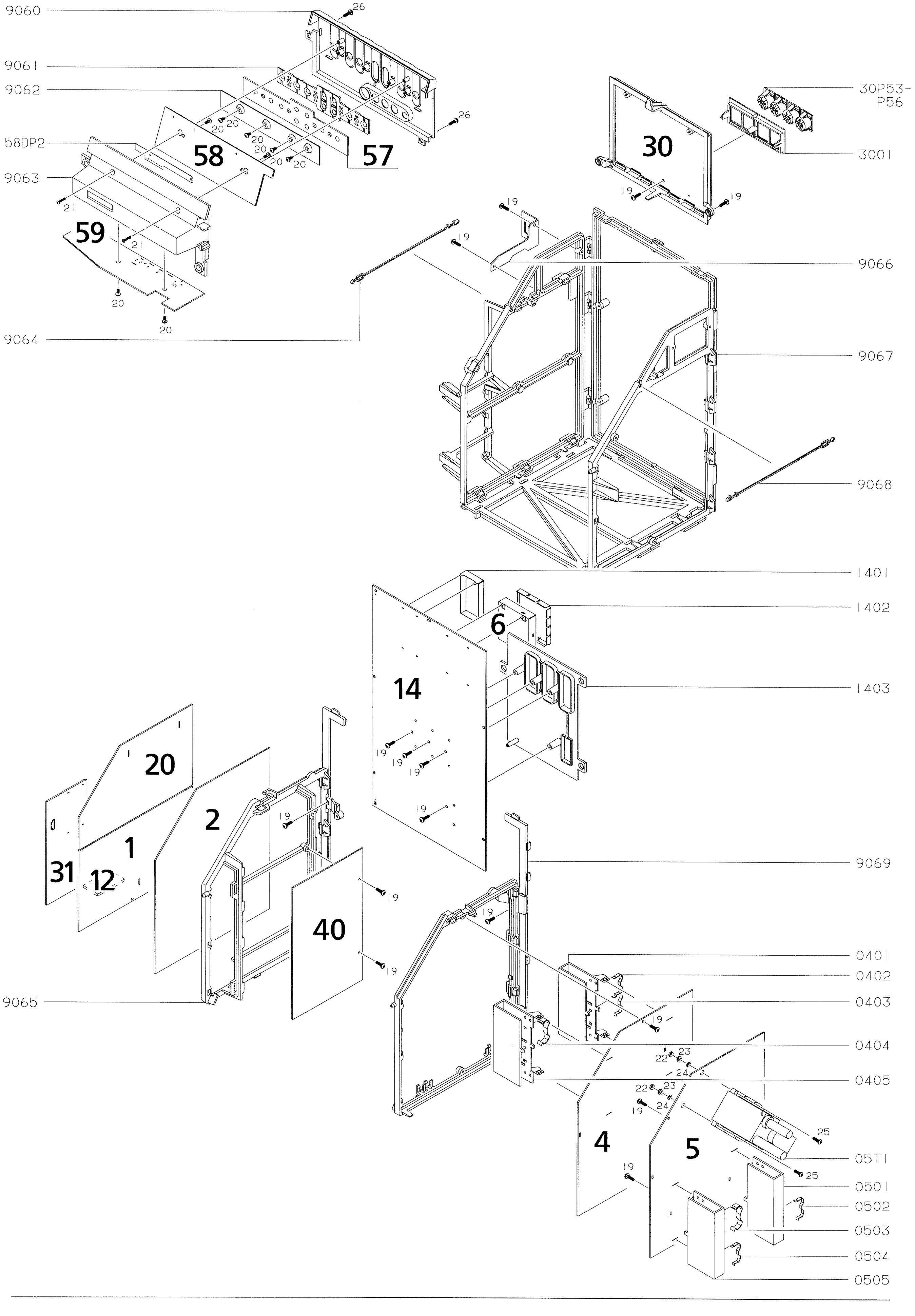
58Modul	8008373	PCB 58, Display & IR
58DP2	8330346	LED display

59Modul	8008374	PCB 59, Camcorder Interface & Headphone

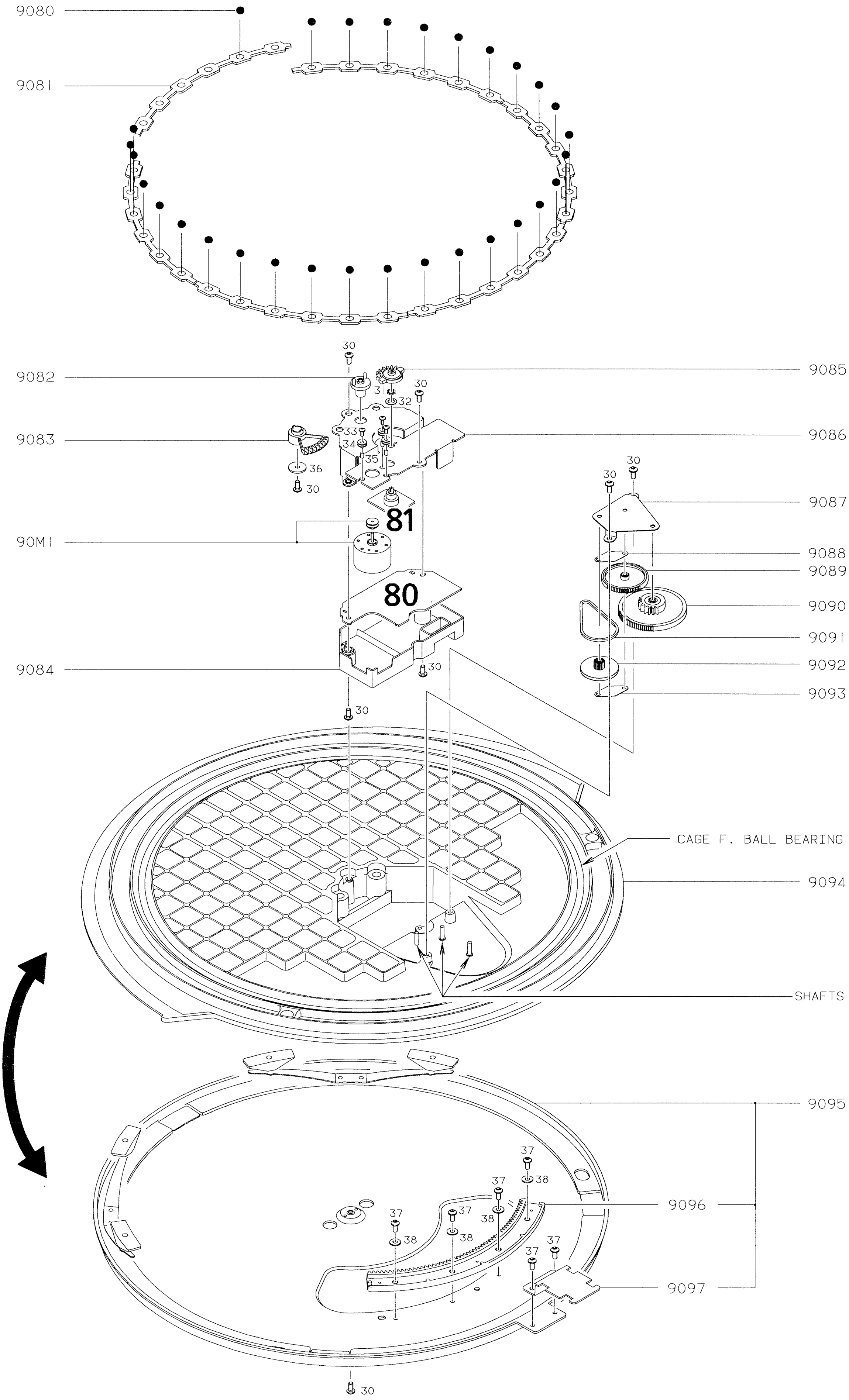
Survey of screws etc.

19	2013137	Screw 3 x 10mm
20	2013153	Screw 3 x 6mm
21	2013220	Screw 2.5 x 10mm
22	2380112	Nut
23	2624013	Spring washer
24	2622117	Washer
25	2038103	Screw 3 x 12mm

El-Chassis


58DP2
30P53-
P56
05T1

Motorized base plate


9080
9081
30
9082
9085
30
31
32
9083
33
34
35
9086
36
30
30
30
9087
81
90M1
9088
9089
80
9090
9091
9084
30
9092
30
9093
CAGE F. BALL BEARING
9094
SHAFTS
9095
37
37
38
9096
37
37
38
38
38
37
37
9097
30

Motorized base plate

9080	2917030	Ball
9081	3152942	Holder f/balls
9082	2993038	Centre tap
9083	2700128	Gear wheel
9084	3162464	Cover w/plate
9085	2700129	Gear wheel
9086	3152940	Holder f/motor
9087	3152941	Holder f/gear wheel
9088	3472827	Damper f/gear wheel
9089	2700131	Gear wheel
9090	2700132	Gear wheel
9091	2732092	Belt
9092	2700130	Gear wheel f/belt
9093	3472827	Damper f/gear wheel
9094	2752035	Top plate
9095	3454810	Bottom plate
9096	2700133	Gear wheel rim
9097	3152959	Holder f/wire bundle

90M1	8400210	Motor

80Modul	8008337	PCB 80, Motor Stand Control

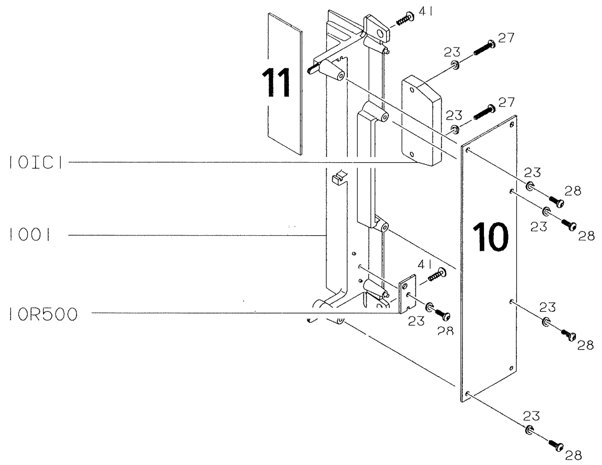
81Modul	8008338	PCB 81, Motor Stand

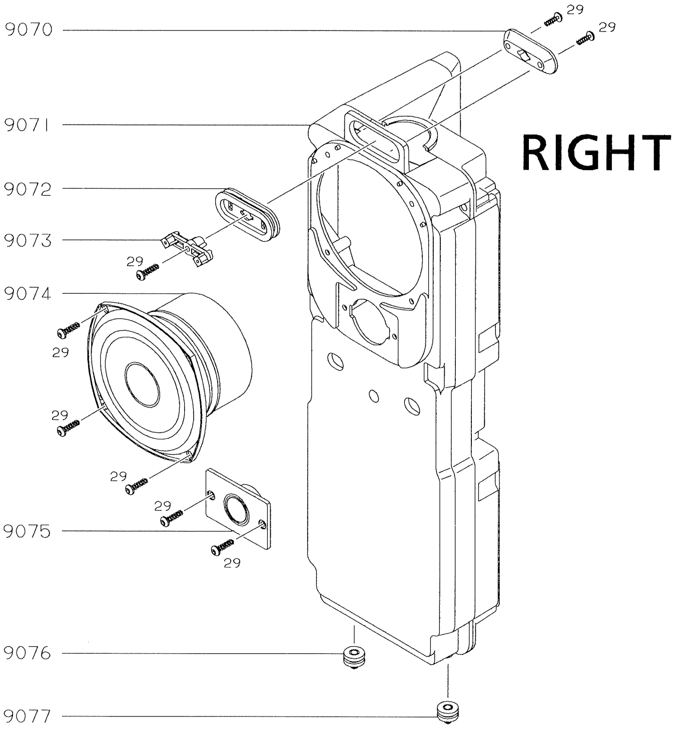
Survey of screws etc.

30	2042074	Screw 4 x 8mm
31	2380165	Nut
32	2622500	Washer
33	2036061	Screw 2.6 x 6.5mm
34	2938306	Rubber bushing
35	2930074	Bushing
36	2622492	Washer
37	2042073	Screw 4 x 6mm
38	2622467	Washer

LUBRICATION	
Cage for ball bearing	Full synthetic grease
Tooths on gear wheel rim 9096 Full periphery of gear wheels 9089 and 9090 Rim of gear wheel 9083	3984049 Barrierta grease L55/3 (25g)
Shafts on 9094	3984051 Barrierta oil IS Fluid (50ml)

Sound


41
27
23
11
27
23
10IC1
23
28
1001
10
23
28
41
10R500
23
28
23
28
23
28


9070
29
29
9071
RIGHT
9072
9073
29
9074
29
29
29
29
9075
29
9076
9077

9070	3152979	Holder	9073	3152980	Holder
9071	3430734	Loudspeaker cabinet, left	9074	8480261	Bass speaker 4.5"- 8 Ω
			9075	8480243	Treble speaker 18mm - 8 Ω
	3430735	Loudspeaker cabinet, right	9076	3333033	Rubber bushing
9072	3333031	Gasket	9077	3333033	Rubber bushing

10Modul	8008369	PCB 10, Sound Output
1001	3358317	Holder
10IC1	8350088	STK 4122-2
10R500	8008151	NTC resistor

11Modul	8008370	PCB 11, Cross Over Network

Survey of screws etc.

23	2624013	Spring washer	29	2019018	Screw 4 x 16mm
27	2011056	Screw 3 x 16mm	41	2015165	Screw 5 x 15mm
28	2013188	Screw 3 x 8mm			

Survey of wire bundles

6276988 Wire bundle f/PCB1-PCB14-PCB20-PCB30-PCB31
Consists of:
1P27 - 14P8
1P28 - 14P9
1P72 - 31P94/95/96/97
20P25 - 14P6
30P26 - 14P17

6276989 Wire bundle f/PCB2-PCB3-PCB14-PCB40
Consists of:
2P29 - 14P5
2P30 - 14P4
2P31 - 14P3
2P32 - 14P2
2P33 - 14P7
2P34 - 3P37
2P35 - 40P36
3P40 -

6276995 Wire bundle f/PCB3-PCB4-PCB5-PCB10-PCB14-PCB60
Consists of:
4P41 - 14P13
4P42 - 14P14
4P43 - 5P49
4P44 - 10P58
4P46 - 60P67
5P47 - 14P15
5P48 - 14P16
5P50 - 3P38
5P51 - Deflection coil
5P73 - Deflection coil
10P57 - 14P18

6276996 Wire bundle f/PCB14-PCB57-PCB58-PCB59
Consists of:
57P75 - 58P74
58P63 - 14P10
59P64 - 14P11

6276997 Wire bundle f/PCB14-PCB60
Consists of:
14P19 - VTR Module P122
60P66 - VTR Module
60P69 - VTR Module P101

Setting Up Guides

3503656	Danish
3503657	Swedish
3503658	English
3503659	German
3503660	Dutch
3503661	French
3503662	Italian
3503663	Spanish
3503664	Finnish

Setting Up Guide for Satellite

3500489	English

Owner's Manuals

3501601	Danish
3501602	Swedish
3501603	English
3501604	German
3501605	Dutch
3501606	French
3501607	Italian
3501608	Spanish
3501611	Finnish

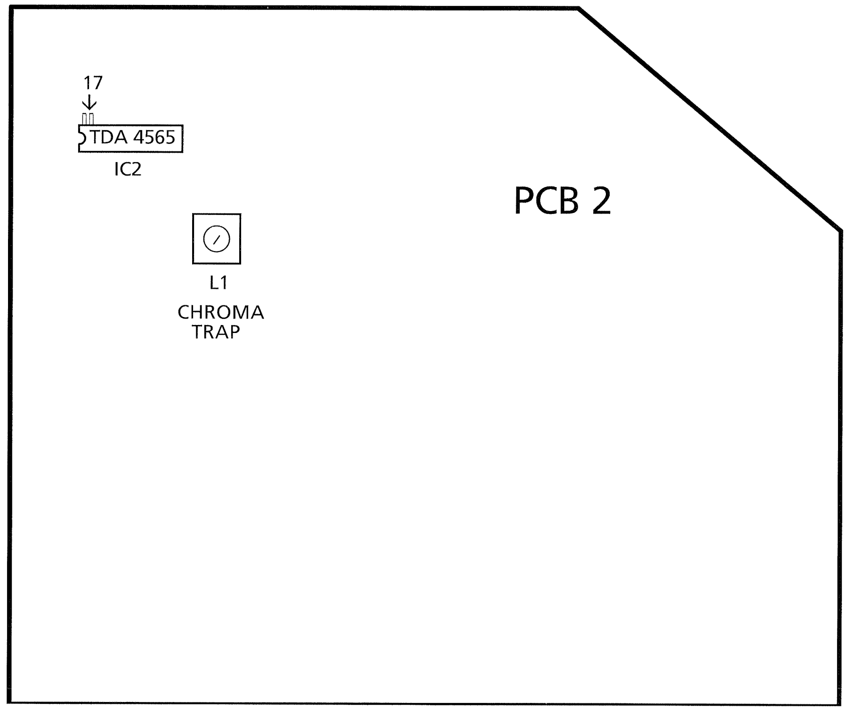
Packing

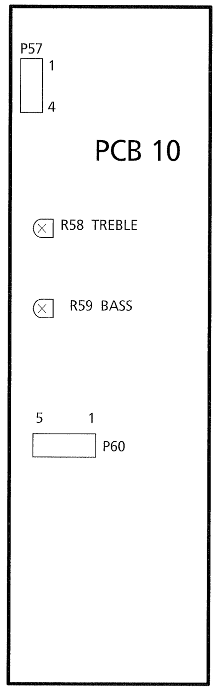
3392413	Wooden liner (1 pcs)
3397949	Foam packing
3917105	Foam foil (1 pcs)
3392410	Outer carton, top
3392410	Outer carton, bottom
3392411	Outer carton, sides
3946167	Strap
3946136	Holder f/strap
8700017	Battery f/Beo4

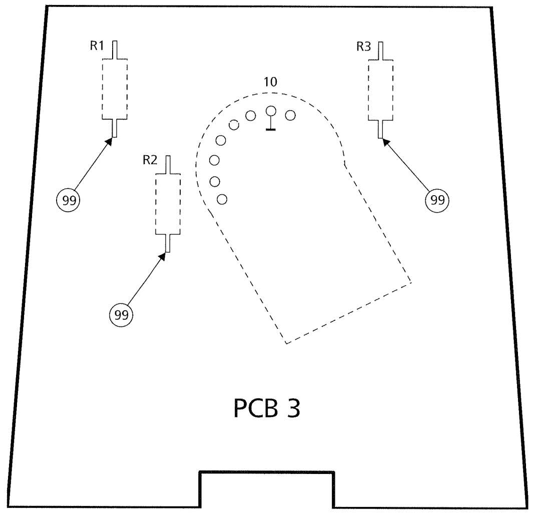
Accessories

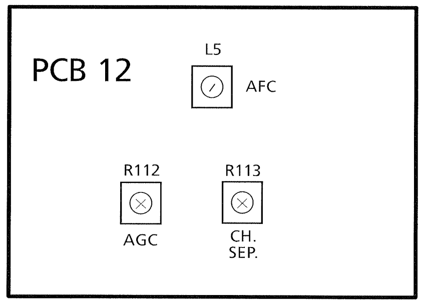
See specification guidelines page 1-2

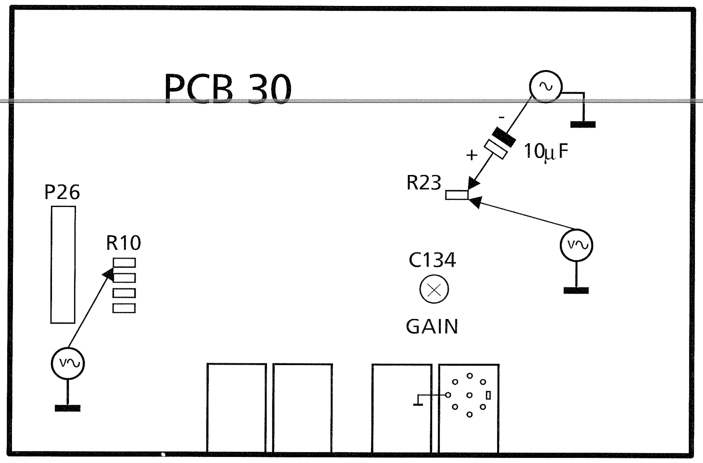
ADJUSTMENTS


17
TDA 4565
IC2
PCB 2
L1
CHROMA
TRAP


P57
1
4
PCB 10
R58 TREBLE
R59 BASS
5
1
P60


R1
R3
10
R2
99
99
99
PCB 3


PCB 12
L5
AFC
R112
R113
AGC
CH.
SEP.


PCB 30
-
+
10µF
R23
P26
R10
C134
GAIN

SERVICE ADJUSTMENTS WITH Beo4

BeoVision Avant permits six different picture formats to be selected by means of the Beo4 remote control terminal. When one of these formats has been selected it is possible to store the parameters for picture and geometry adjustments in Service mode. Separate parameters are saved for each of the six formats. See the section "Brief Operating Guide" (hereafter referred to as B.O.G.) for general information on operation, if necessary.

Reset

Set brilliance, colour saturation and contrast to nominal values so that they can be recalled by means of *RESET* (perhaps a ADD function, see B.O.G.):

- Press TV MENU 5 (or 4) then 3

Brilliance	Colour	Contrast
32	32	44

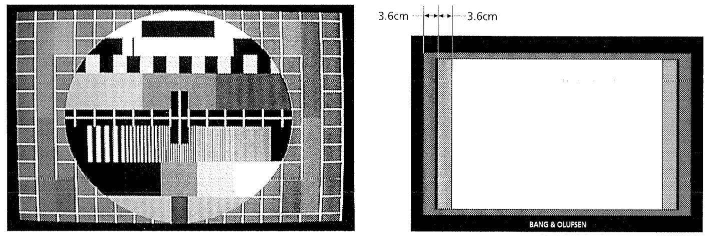
- Adjust by means of ◀◀, ▶▶, ▲ or ▼, and back up with STOP. Values can be stored by means of GO.

Format

The six different picture formats each require a separate adjustment in Service mode. The format is selected by means of a Beo4 terminal:

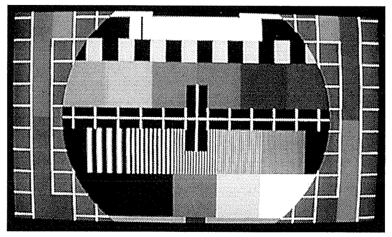
- Connect a standard 4:3 test pattern (e.g. Philips):
- Press TV and toggle on LIST until the display reads *FORMAT.*
- 1 shows a Bang & Olufsen optimized 14:9 picture when a standard 4:3 signal is connected:

FORMAT 1


3.6cm
3.6cm
BANG & OLUFSEN

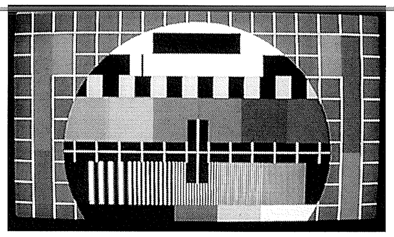
- 2 shows a full-screen 16:9 picture when a standard 4:3 signal with a black bar at the top and bottom is connected:

FORMAT 2



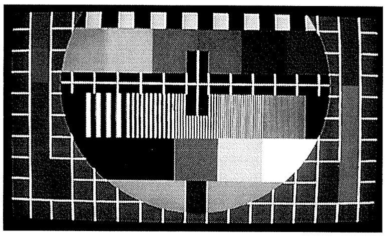
- 3 shows a full-screen 16:9 picture when a standard 4:3 signal with a black bar at the bottom of the picture is connected:

FORMAT 3



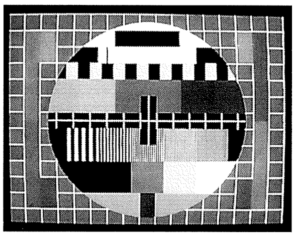
- **4** shows a full-screen 16:9 picture when a standard 4:3 signal with a black bar at the top of the picture is connected:

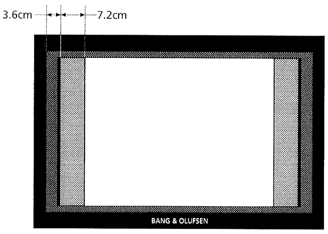
FORMAT 4



- **5** shows a standard 4:3 picture when a standard 4:3 signal is connected:

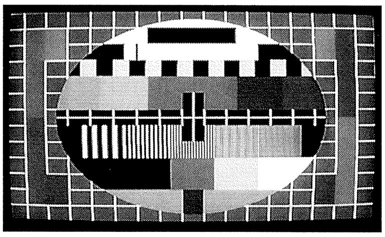
FORMAT 5



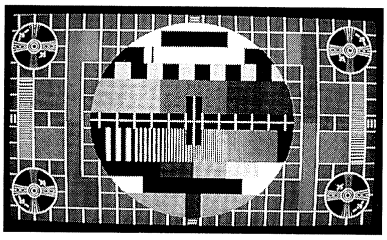


- **6** shows a full-screen 16:9 picture when a wide-screen 16:9 signal is connected:

FORMAT 6 4:3



FORMAT 6 16:9



Service mode

When the desired format has been selected, bring the TV into SERVICE MODE, thereby gaining access to the Service menu:

- Press TV MENU, and select the Setup line by means of the ▼ key, and then press GO 0 0 GO.

Service menu

1 Monitor
2 TV tuner
3 V.Tape

- Press 1 to gain access to adjustments on Monitor.

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

Picture adjustments

- Press 3 in the Monitor service menu to gain access to picture adjustments:

Picture adjustments

1	Rdr XX	Red drive 0 - 63
2	Gdr XX	Green drive 0 - 63
3	Rcu XX	Red cut-off balance 0 - 63
4	Gcu XX	Green cut-off balance 0 - 63

- Connect a standard 4:3 test pattern (e.g. Philips) to the selected format.
- Select picture adjustments with a digit (1 - 4) and adjust by pressing ▲ or ▼. During the adjustment procedure it is possible to select a new picture adjustment by means of ◀◀ or ▶▶. Store the adjustment by pressing GO, and select a new adjustment or end the menu by pressing STOP. The EXIT key will get you out of service menus.

Drive

- Adjust the brilliance to the nominal value: Brilliance 32.
- Remove the colour saturation: 00.
- Adjust the red and green drive (Rdr and Gdr) to correct white level.

Cut-off balance

- Adjust the brilliance to the nominal value: Brilliance 32.
- Remove the colour saturation: 00.
- Adjust the red and green cut-off balance (Rcu and Gcu) so that the dark fields in the test pattern become colourless.

Geometry adjustments

- Press 4 in the Monitor service menu to gain access to the geometry adjustments:

Geometry adjustments

1	Hph XX	Horizontal phase 0 - 63
2	Ham XX	Horizontal amplitude 0 - 63
3	Vam XX	Vertical amplitude 0 - 63
4	Vsc 00	Vertical s-correction 0 - 63
5	Vsh 31	Vertical shift/centring 0 - 63
6	Vsl XX	Vertical slope 0 - 63
7	EWc XX	East/West corner 0 - 63
8	EWp XX	East/West parabola 0 - 63
9	EWt XX	East/West tilt 0 - 63

- Connect a standard test pattern (e.g. Philips) to the selected format.
- Select geometry adjustment with a digit (1 - 9), and adjust by pressing ▲ or ▼. During the adjustment procedure it is possible to select a new geometry adjustment by pressing ◀◀ or ▶▶. Store the adjustment by pressing GO, and select a new adjustment or end the menu by pressing STOP. The EXIT key will get you out of service menus.

Horizontal centring/phase (Hph)

- Set the brilliance to the maximum value: Brilliance 62.
- Adjust the horizontal amplitude to the minimum width: Ham 00.
- If necessary, centre the picture as well as possible using 5S7 (coordinate 7G) in picture format 6 (see the section on Format).
- Centre the picture with horizontal phase (Hph) as a fine adjustment.
- Adjust the horizontal amplitude (Ham) to the correct width (see the section on Format).
- Readjust the horizontal phase (Hph), if necessary.

Horizontal amplitude (Ham)

- Adjust the horizontal amplitude (Ham) to the correct width (see the section Horizontal centring/phase (Hph)). There is a black bar at both sides of the visible picture in the following screen formats:
  Format 1 (14:9) = 3.6 cm/1.42" at each side.
  Format 5 (4:3) = 7.2 cm/2.84" at each side.

Vertical s-correction (Vsc)

- Adjust the vertical s-correction to 0 (Vsc 00) (in all formats).

Vertical centring (Vsh)

- Adjust the vertical centring to 31 (Vsh 31) (in all formats).

Vertical amplitude (Vam)

- Adjust the vertical amplitude (Vam) so that the picture fits at the top (see the section on Format).

Vertical slope (Vsl)

- Adjust the vertical slope/ramp (Vsl) so that the picture fits at the bottom (see the section on Format). The vertical amplitude (Vam) is affected.

East/West corner (E/Wc)

- Adjust the East/West corner (E/Wc) to the correct geometry at the corners.

East/West parabola (E/Wp)

- Adjust the East/West parabola (E/Wp) to the correct geometry at the sides.

East/West tilt (E/Wt)

- Adjust the East/West tilt (E/Wt) to the correct geometry.

ADJUSTMENT GUIDE

A standard colour test pattern must be connected when making the following adjustments unless otherwhise specified.
Service adjustments with the remote control terminal must have been made in advance.

Module 2 Video/Chroma & Teletext

4.43MHz chroma trap

- Connect a PAL colour bar test pattern.
- Connect an oscilloscope to 2IC2 pin 17, TDA4565 (coordinate 6I). Ground on 2IC2 pin 18.
- Adjust 2L1 (coordinate 5G) to obtain the minimum 4.43MHz residue in the signal; use a nonmagnetic adjustment tool.

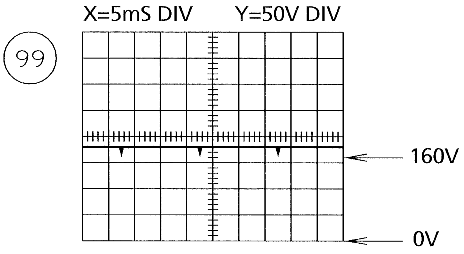
Module 5 Deflection & EHT

Focus

- Set the brilliance and colour saturation to their nominal values (32 and 32).
- Set the contrast to the maximum value (62).
- Adjust to optimum focusing as viewed approx. 10 cm/4" from the edge of the screen by means of the focus potentiometer 5R50 (FOCUS) .

G2 (Cut-off)

- Set brilliance to nominal value (32).
- Remove the A/V plug from the V.TAPE socket, and press **V TAPE**.
- Locate by means of an oscilloscope the test point on 3R1, 3R2 or 3R3 (oscilloscope photo No.99) which has the highest test pulse voltage.
- Adjust the G2 (SCREEN) potentiometer 5R50 until the test pulse voltage is 160VDC (absolute maximum level).
- Connect the A/V plug to the V.TAPE socket upon completion of the adjustment.



Alternative G2 Adjustment procedure

To get a precise adjustment the procedure using an oscilloscope should be followed.

- Set the brilliance and contrast to the nominal value (32).
- Remove the A/V plug from the V.TAPE socket, and press **V TAPE**.
- Cover 58PE1 (photo-transistor) on PCB 58 Display & IR.
- Use a voltmeter (Ri > 1Mohm) for measuring the voltage drop across 3R1, 3R2 and 3R3.
- Adjust by means of the G2 potentiometer 5R50 until there is a voltage of 2V across that resistor 3R1, 3R2 or 3R3, which has the smallest voltage drop.
- Connect the A/V plug to the V.TAPE socket upon completion of the adjustment.

Module 30 Dolby Processing Gain

To be adjusted only in connection with replacement of 30IC8, 30C1, 30C18, 30C19, 30C12, 30C13, 30C134.

- Remove/lift SMD resistor 30R23 (coordinate 2B).
- Connect an audio oscillator to the solder-pad of 30R23, that leads to 30IC8 pin 53, via a 10µF electrolytic capacitor with + facing towards the solder-pad (see adjust figure page 5-1). Ground on Power Link pin 2.
- Set the audio oscillator to generate 5kHz, approx. 200mV RMS.
- Connect an AF voltmeter to the solder-pad of 30R23, that leads to 30IC8 pin 53 (AF surround input), read the level, and make a note of it.
- Connect the AF voltmeter to 30R10 (AF surround output), and adjust 30C134 until the same level is measured at 30R10 (output) as was measured at 30R23 (input).
- Check that the gain is within ±3dB by repeating the measurement at 3kHz and 1kHz.
- Reinstall 30R23.

Module 40 Picture in Picture Cloche filter

- Connect a SECAM test pattern (Vert. colour bar).
- Adjust 40L1 until the optimum colour graduations in the colour bar have been achieved.
- Connect a SECAM test pattern (Horiz. colour bar) for control if necessary, and check by means of an oscilloscope wether all colour bars have the same level.

Module 10, Output Amplifier Adjustment of bass/treble speaker level

This adjustment to be carried out only when replacing 10IC1, 10R58, 10R59 or one of the speaker units. Module 10, Output Amplifier, is the same module in the right and left channels.

The new speaker unit will have a rated value stamped on its back, and this value has to be used when making the adjustment.

- Remove the A/V plug in V.TAPE and connect an audio oscillator to:

A/V plug:	14P21 pin 2	Audio R (right) in
	14P21 pin 4	Audio ground
	14P21 pin 6	Audio L (left) in

- Press V TAPE and toggle on LIST until the display reads *SPEAKER*, and then press 1 (Sound mode 1 - internal TV speakers).
- The TV sound controls, Bass, Treble and Balance, must be unregulated (0), and the Loudness must be cut out (off). Press: MENU 5 (or 4) 2 1 and adjust by pressing ▶▶, ◀◀, ▼ or ▲.
- Connect an AF voltmeter to 10P57, pin 3.
- If the level in the *treble* has to be adjusted, connect a 10kHz signal, and adjust the level at the input 10P57-3 to 250mV by means of the audio oscillator output and volume ∧ or ∨ on Beo4.
- If the level in the *bass* has to be adjusted, connect a 1kHz signal, and adjust the level at the input 10P57-3 to 250mV by means of the audio oscillator output and volume ∧ or ∨ on Beo4.
- Connect an AF voltmeter across the output of the unit in question (the speaker units need not be connected during the adjustment procedure):

Bass:	10P60-1	Bass out
	10P60-2	N.C.
	10P60-3	Bass ground
Treble:	10P60-4	Treble out
	10P60-5	Treble ground

- Adjust until the voltage at the speaker output corresponds to the voltage found in the speaker level table by means of the rated value stamped on the back of the speaker unit.

Bass adjustment: 10R59 (coordinate 1E)
Treble adjustment: 10R58 (coordinate 1D)

Rated value in dB	Bass	Treble
+2.00 dB	1.41 V	2.04 V
+1.75 dB	1.46 V	2.10 V
+1.50 dB	1.50 V	2.16 V
+1.25 dB	1.54 V	2.23 V
+1.00 dB	1.59 V	2.29 V
+0.75 dB	1.63 V	2.36 V
+0.50 dB	1.68 V	2.43 V
+0.25 dB	1.73 V	2.50 V
0.00 dB	1.78 V	2.57 V
- 0.25 dB	1.83 V	2.65 V
- 0.50 dB	1.88 V	2.72 V
- 0.75 dB	1.94 V	2.80 V
- 1.00 dB	2.00 V	2.88 V
- 1.25 dB	2.06 V	2.97 V
- 1.50 dB	2.12 V	3.05 V
- 1.75 dB	2.18 V	3.14 V
- 2.00 dB	2.24 V	3.24 V

Replacement of module 10, Output Amplifier

When replacing module 10, Output Amplifier, the outputs (bass and treble) shall be adjusted to the nominal value (0.00dB) according to the adjustment procedure for Adjustment of Bass/Treble Speaker Sound Level. Module 10, Output Amplifier, is the same module in the right and left channels.

Module 12 IF

To be adjusted only when replacing module 12 IF, or 12IC4, TDA9815 (coordinate 2A).

Test plug 1P89:

Pin 1	ground
Pin 2	5V
Pin 3	AF left (CH SEP)
Pin 4	V_{AFC}
Pin 5	AF right
Pin 6	V_{AGC} Takeover

- Connect an aerial signal with a known frequency (XXX.25MHz) that contains A2 stereo sound modulation.
- Select AFC to be off in the TV service setup menu, press: TV MENU 5 (or 4) 0 0 GO 2 ▶▶ ▼ GO.
- Select TV tuning menu: STOP 1 1 or TV MENU 5 (or 4) 1 1.
- Set the tuner to the known frequency, and press: X X X (digit entry) ▶▶, and select a programme number X X GO.

AFC

- Connect a DC voltmeter to 1P89 pin 4 (V_{AFC}).
- Adjust 12L5 (coordinate 2B) with a nonmagnetic trimming key until there is a voltage of 1.95V ±0.1V at 1P89-4 (V_{AFC}).

AGC Takeover

- Adjust the aerial signal level to 2mV.
- Connect a DC voltmeter to 1P89, pin 6 (V_{AGC} Takeover).
- Adjust 12R112 (coordinate 2B) until there is a voltage of 7.3V ±0.1V at 1P89-6 (V_{AGC} Takeover).

Channel separation

- Connect an oscilloscope to 1P89, pin 3.
- Adjust 12R113 (coordinate 2B) until the minimum crosstalk has been obtained.

REPAIR TIPS
Service mode

The service mode consists of two parts: Service menu and bus ignore mode.

Service menu

The service menu contains options such as picture and geometry adjustments - see the section SERVICE ADJUSTMENTS WITH Beo4. In the following description the Beo4 terminal is used for operating the product. SERVICE MODE, thereby gaining access to the Service menu:

- Press TV MENU, and select the Setup line by means of the ▼ key, and then press GO 0 0 GO. It is possible to "go backwards" in the menus by pressing STOP. Service mode is abandoned by pressing ●.

```
Service menu

1  Monitor
2  TV tuner
3  V.Tape
```

In the service menu you can choose which source you wish to have information on or wish to adjust/set up.

Select Monitor, press 1

```
Monitor service menu

1  Monitor information
2  Service counters
3  Picture adjustments
4  Geometry adjustments
5  Text Registers
```

In the Monitor service menu you can choose among the following items of information:
(Picture and Geometry adjustments are described in the section on adjustments).

Monitor information menu, press 1

```
Monitor information

06 IC1 :      (AP) SW    1.0
14 IC13:      (FEP) SW   1.0
Type                     1811101
Serial no.               12345678
Last TV error            NO
Last ML/SL error         NO
```

- Software version number
- Type, and serial number
- Last TV error
- Last ML/SL error

Last error

The TV is able to detect certain types of error and to display them on the screen menu.

The first error code is for detection of TV errors.
The following error types can be displayed:
Last TV error NO = no error registered.
Last TV error xx - 1 = error on I^2C bus 1.
Last TV error xx - 2 = error on I^2C bus 2.
Last TV error DF = Data failure (EEPROM 6IC4 may be defective).
Last TV error PF = Power Fail (TDA9162 2IC7 cannot start up for TV mode).

The other error code is for detection of errors in the Master Link system.
The following error types can be displayed:
Last ML/SL error NO = no error registered.
Last ML/SL error CI = address configuration impossible.
Last ML/SL error TD = ML data pulled down.
Last ML/SL error TU = ML data pulled up.
Last ML/SL error -- = other undefinable error possibilities.

After repair of an error that has triggered the display of an error code, the error code has to be deleted. This is done by pressing GO in the Monitor information menu.

I^2C bus error

An I^2C bus error means that the communication on the bus fails when the microcomputer tries to communicate with the address in question. In most cases this means that the addressed IC is defective but the defect could also be in one of the components surrounding the IC or in other components on the bus.

Addresses in connection with I^2C bus errors:
Last error on bus 1
D0 - 1 14IC40, MK41T56 Time clock.
88 - 1 2IC4, TDA4680 Video processor.
8A - 1 2IC7, TDA9162 Colour decoder & sync processor.
4A - 1 41IC2, PCF8574 I^2C I/O expander.
2E - 1 40IC5, SDA9188 P-in-P processor.

Last error on bus 2
C0 - 2 1TU1, TV tuner.
84 - 2 1IC3, TDA8417 A2 stereo decoder.
B6 - 2 31IC7, CF70088 NICAM stereo decoder.
C6 - 2 20TU1, Satellite tuner (SXT2001CDI).
C4 - 2 20TU1, Satellite tuner (SXT2041CD).
22 - 2 2IC6, SDA5273 Teletext decoder.
80 - 2 14IC10, TDA7314S Sound controls.
90 - 2 14IC3, TEA6425 Video switch.
94 - 2 14IC4, TEA6425 Video switch.
96 - 2 14IC2, TEA6425 Video switch.
88 - 2 30IC7, TDA7318 Sound processor.
4C - 2 30IC4, PCF8574 I^2C I/O expander.
4E - 2 30IC3, PCF8574 I^2C I/O expander.

Data failure

If an error occurs in the EEPROM (6IC4) that prevents output of geometry and picture data to the TV set, the microcomputer will replace the missing data with default data that is stored in the PROM (6IC1).

Power fail

If 2IC7 (TDA9162) is unable to start up in video mode after 20 attempts, the TV is switched off. This may happen as a result of an error condition in the deflection circuits.

Last ML/SL error CI

Error during address configuration. No address has been allocated because an excessive number of units has been connected to the link.
- Disconnect all units from the link and reconnect them again, one at a time. Remember that this also applies to the 6-pole ribbon cable between the TV set and the VTR unit.

Last ML/SL error TD

The link is pulled down (Low). This error can occur in the form of a physical short circuit in the link, in the link drivers, or in the ML master/source circuit in the TV.
- Check whether there are pulses at 14IC13, pin 15 (ML M/S). The frequency should be approx. 1.5ms (the TV is the master).
- Disconnect the units from the link, one at a time, and check at the same time whether communication starts to be transmitted on the link. Remember that this also applies to the 6-pole ribbon cable between the TV set and the VTR unit.

Last ML/SL error TU

The link is pulled up (High). This error is caused either by the pull-up resistance in the system having become too low or by an error in the link drivers.
- Disconnect the TV from the external link connection. Disconnect the 6-pole ribbon cable between the TV and the VTR unit, too. Switch on the TV, and check that a telegram of approx. 15ms, measured at 14IC13, pin 13 (ML TRANSMIT), is transmitted within 3-4 seconds. It should be possible to measure the same signal at 14IC13, pin 14 (ML RECEIVE), only it will be 10-15μs delayed.

Select Text Registers in the Monitor service menu, press 5

Test Register setup

R01	R02	R03	R04	R05	R06	R07	R08
5	11	0	0	0	0	0	0
R09	R10						
0	0						

Group delay errors in certain cable aerial systems can disturb the reception of teletext. This is prevented by connecting a filter in series with the CVBS signal applied to the teletext decoder.
The numbers below the Register numbers R01 - R10 are programme numbers. If all the numbers are 0, no filter has been connected on any programme number.
If you wish to connect a filter on a programme number, select a register by pressing ◄◄ / ►►, then press the desired programme number, and finally press GO.
In the example above a filter has been connected on programmes 5 and 11. The filter is not engaged until the next time you switch to the programme in question.

Select Service counters in Monitor service menu, press 2

Monitor service counters

Stand-by (days)	0000
Audio mode (days)	0000
Video mode (days)	0000
On/Off (times ★10)	0000

On/Off (times ★ 10) shows how many times the TV has been switched off to stand-by mode. The number is given in full tens. If the number exceeds four digits, the four least significant digits are shown (e.g. 12834 is shown as 2834).
The other times in the menu are shown in full days.

Select TV tuner in the Service menu, press 2

TV service setup

Tuner system 1		AFC On
Low tuning range 45		High tuning range 860
Lower band limit 170		Upper band limit 450
Vhf-1 const 162	Vhf-2 const 148	Uhf const 49

In the TV service setup menu it is only the Tuner system and AFC fields that have to be used. The rest of the fields are for factory usage, and the values in them may not be changed.
Tuner system:
The digital value in the field stands for the CTV system for which the applicable IF is intended.
If the Tuner & IF PCB is replaced to permit reception of a different CTV system, the digital value has to be changed.
The digital values for the various systems are the following:
B/G = 1
L/L' = 2
M = 4
D/K = 8
I = 16
The digital value for system combinations is obtained by adding the applicable digits.
The digital values for the IF variants in BeoVision Avant are the following:
B/G = 1
B/G/L/L' = 3
I = 16
B/G/L/L'/I = 19
B/G/M/D/K/I = 29
Press GO to save the digital value.

AFC On/Off is used in connection with adjustments but it may also be useful in other situations. Press ◀◀ / ▶▶ to move the cursor.
Press ▲ / ▼ to switch between On/Off.
AFC Off cannot be stored. AFC is always On after stand-by.

Select V.Tape in the Service menu, press 3, and select information in the V.Tape service menu, press 1.
In the V.Tape information menu you can see the software versions in the VTR, for example.

The V.Tape service mode is described in the service manual for the BeoVision Avant VTR.

Bus ignore mode

If an error occurs in the I^{2}C bus system which makes the TV go into stand-by every time it is attempted to be switched on, it is possible to switch on the TV in such a way that the error is ignored:
- The TV must be in stand-by mode.
- Short-circuit the two-pin plug, P84 (ignore) coordinate 7M, on the AV switch, PCB14.
- The TV will now start up ignoring any bus errors if that is possible. If it is not possible to start up, the reason is probably an error in 6IC3, 14IC13, 26IC3 (if a Positioner is installed), or one of the surrounding components for these IC's.

Options

The TV can be programmed for three different options.

Option 0 = The IR receiver in the TV is disconnected.

Option 1 = Video system and audio system are placed in the same room.

Option 2 = Video system and audio system are placed in different rooms.

Programming example using a Beo4 remote control terminal:
- The TV must be in stand-by mode.
- Press ●, hold it down and press LIST, press GO and then LIST until the Beo4 display reads V.OPT. Now enter the number of the desired option.

The TV is programmed for option 1 from the factory.

Sound output PCB10 & ABL PCB11

When servicing the sound output, PCB10 and ABL PCB11, the work may be facilitated by removing the cooling plate, because it covers a number of the components. The STK output IC can easily stand operating at low drive without a cooling plate for short periods of time.

SMPS on PCB4

If there is an error in the main SMPS power-supply unit on PCB4, the following tips may be helpful during the repair.

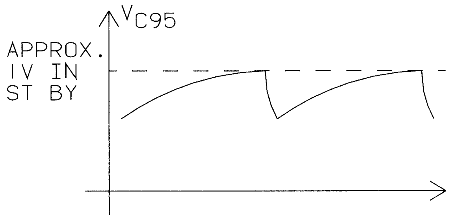
If TR41 is defective (which is checked most quickly with an ohmmeter), TR84, TR85 and TR86 should also be replaced.
If TR41 is not defective, the following should be checked:

1. The voltage at C4 must exceed approx. 250V. If it does not, the fuse or D1 may be defective.

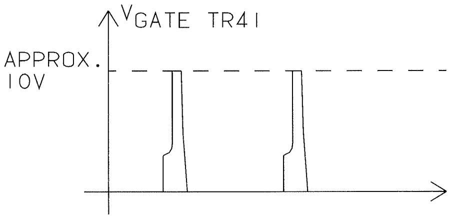
2. The power supply at C83 should be approx. 6V during start-up. If it is less, the power-supply unit will not start up. This may be due to a defective component drawing too much current from the power-supply unit.

3. If TR61 is short circuited, the power-supply unit will be unable to start up. The voltage at C83 will be approx. 6V.

4. If the voltage at C95 is not a DC voltage but looks as illustrated below, the overload protection circuit, TR91 etc., will be active. Maybe an electrolyte or a diode on one of the supply voltages is short circuited, or the power-supply unit may be subject to an excessive load. The same error will occur if L91 is disconnected.



5. Disconnect drain at TR41 (disconnect J5). Connect an external DC supply of 15-20V to C83, and connect the TV to the mains voltage. The oscillator should now be running at 20 kHz. The voltage at C95 should be approx. 1.3V DC, and not as illustrated above.
   A square-wave voltage should now be present at the collector of TR83. The square-wave voltage is amplified in TR84 and applied to the gate of TR41.

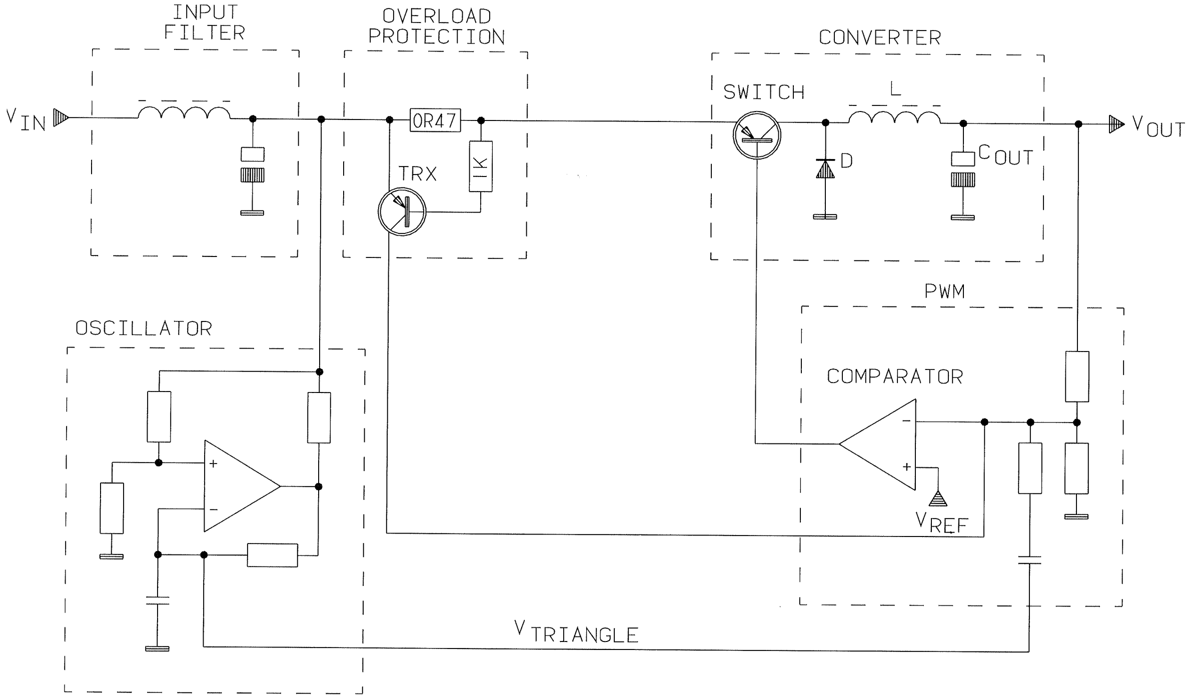


6. If the TV will not start up in audio mode from ST BY, check that pin 2 on P42 goes high.

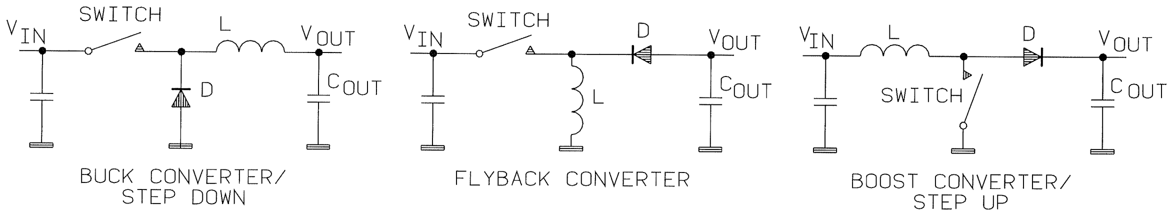
50 kHz SMPS

The BeoVision Avant contains three small SMPS power-supply units. They are placed on AV switch PCB14, Satellite PCB20 and Dolby Surround PCB30 respectively.
The three SMPS's are designed according to three different principles, yet they have the following features in common:

- Oscillator.
- Feedback/pulse-width modulator (PWM).
- Input filter.
- Overload protection circuit.
- Converter (switch).


INPUT FILTER
OVERLOAD PROTECTION
CONVERTER
V_{IN}
0R47
TRX
1K
SWITCH
L
D
C_{OUT}
V_{OUT}
PWM
OSCILLATOR
COMPARATOR
V_{REF}
$V_{TRIANGLE}$

The three principles are illustrated below:


V_{IN}
SWITCH
L
V_{OUT}
D
C_{OUT}
BUCK CONVERTER/ STEP DOWN
V_{IN}
SWITCH
D
V_{OUT}
L
C_{OUT}
FLYBACK CONVERTER
V_{IN}
L
D
V_{OUT}
SWITCH
C_{OUT}
BOOST CONVERTER/ STEP UP

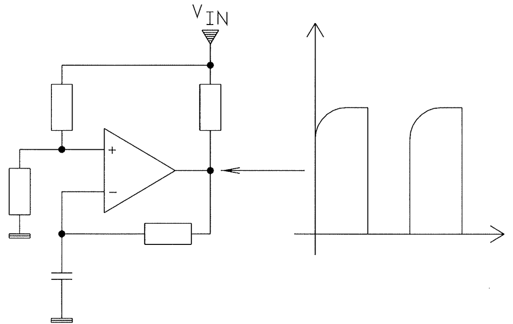
Error tips for the converter

- Defective switch → No Vout, or Vout = Vin
- Defective diode → No Vout, or Vout = Vin

General troubleshooting tips

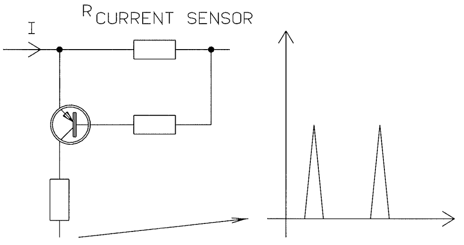
1. Check the voltage at the collector of the switch transistor. It should be a square-wave voltage, perhaps with some ringings. The frequency of the pulses is approx. 50 kHz. If a DC voltage is present, the SMPS does not operate. The oscillator, switch transistor or converter diode may be defective.

2. Check that the oscillator is operating at approx. 50 kHz. If not, there may be an error in the oscillator, or the overload protection circuit may be active. The oscillator in all of the small SMPS's are designed in the same way, over a comparator.



OSCILLATOR

3. Check whether the overload protection circuit is active. If it is active, that may be due to an excessive load, or a defective component in the SMPS. Disconnect the load to check where the error is. The overload protection circuit generates a pulse when the current in the switch transistor becomes too great. When this happens, the switch transistor is disconnected, and it is not switched back on again until a period of approx. 20μs has elapsed.



OVERLOAD PROTECTION
ACTIVE

SERVICE-EINSTELLUNGEN MIT Beo4

BeoVision Avant bietet Wahlmöglichkeiten für sechs verschiedene Bildformate mit Hilfe des Fernbedienungsterminals Beo4. Wenn eines der Bildformate gewählt worden ist, können die Parameter für Bild- und Geometrie-einstellungen im Modus 'Service mode' gespeichert werden. Es sind jeweils die separaten Parameter für die sechs Formate zu speichern. Siehe hierzu den Abschnitt 'Brief Operation Guide' (im folgenden B.O.G. genannt) bezüglich der allgemeinen Bedienung.

Reset

Helligkeit (Brilliance), Farbsättigung (Colour) und Kontrast (Contrast) auf ihre Nominalwerte einstellen, so daß diese Werte mit der Taste *RESET* wieder aufrufbar sind (vielleicht ADD-Funktion, siehe B.O.G.).

- Tastenbetätigung: TV MENU 5 (oder 4) 3

Brilliance	Colour	Contrast
32	32	44

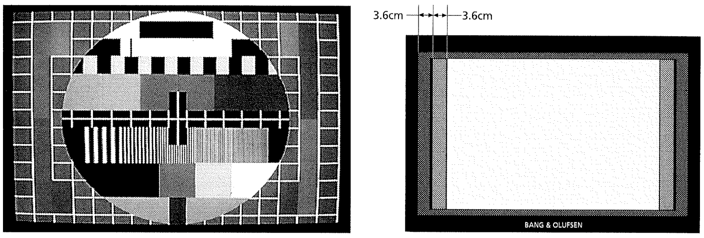
- Mit den Tasten ◀◀, ▶▶, ▲ oder ▼ einstellen, und mit der Taste STOP rückwärtsschalten. Werte evtl. mit der Taste GO speichern.

Format

Die sechs verschiedenen Bildformate erfordern jeweils ihre eigene Einstellung im Modus 'Service mode'. Das Format wird mit einem Fernbedienungsterminal Beo4 gewählt:

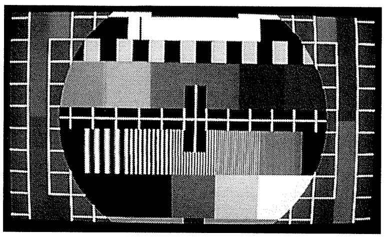
- Ein Standard-4:3-Testbild (z.B. Philips) anschließen:
- TV drücken und solange auf LIST drücken, bis im Display *FORMAT* erscheint.
- 1 zeigt ein Bang & Olufsen-optimiertes 14:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals:

FORMAT 1



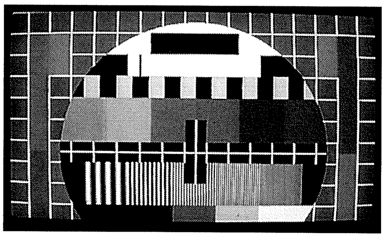
- 2 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals mit schwarzem Streifen (Balken) am oberen und unteren Bildrand:

FORMAT 2



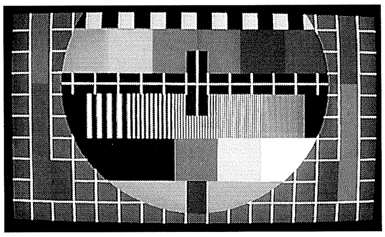
- 3 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals mit schwarzem Streifen (Balken) am unteren Bildrand:

FORMAT 3



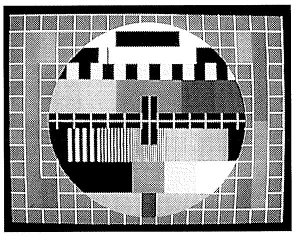
- 4 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Standard-4:3-Signals mit einem schwarzen Streifen (Balken) am oberen Bildrand:

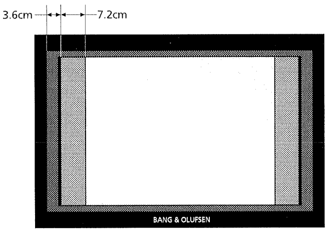
FORMAT 4



- 5 zeigt ein Standard-4:3-Bild bei Anschluß eines Standard-4:3-Signals:

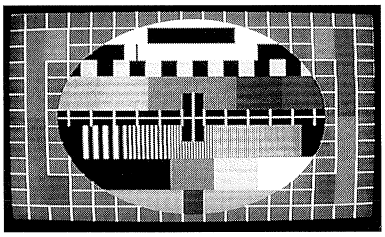
FORMAT 5



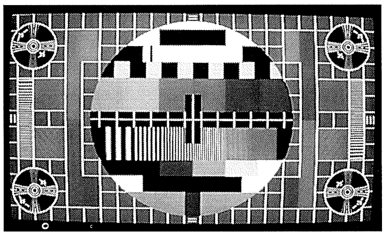


- 6 zeigt ein volles 16:9-Breitwandbild bei Anschluß eines Widescreen- oder Breitbild-16:9-Signals:

FORMAT 6 4:3



FORMAT 6 16:9



Service mode

Das TV-Gerät in SERVICE MODE bringen, wenn das gewünschte Format gewählt worden ist, um Zugang zum 'Service menu' zu bekommen:
- Tastenbetätigung: TV MENU und anschließend die 'Setup'-Zeile mit der Taste ▼ wählen und dann GO 0 0 GO drücken.

Service menu

1 Monitor
2 TV-tuner
3 V.Tape

- 1 drücken, um Zugang zu den 'Monitor'-Einstellungen zu bekommen.

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

Bildeinstellungen

- 3 im 'Monitor service menu' drücken, um Zugang zu den Bildeinstellungen (Picture adjustments) zu bekommen:

Picture adjustments

1 Rdr XX	Red drive 0 - 63
2 Gdr XX	Green drive 0 - 63
3 Rcu XX	Red cut-off balance 0 - 63
4 Gcu XX	Green cut-off balance 0 - 63

- Ein Standard-4:3-Testbild (z.B. Philips) an das gewählte Format anschließen.
- Bildeinstellung mit den Ziffern (1 - 4) wählen und mit ▲ oder ▼ einstellen. Während des Einstellvorgangs ist es möglich, eine neue Bildeinstellung mit ◀◀ oder ▶▶ zu wählen. Die Einstellung mit GO speichern und evtl. eine neue Einstellung wählen, - oder das Menü mit STOP beenden. Zum Verlassen der Service-Menüs die Taste EXIT drücken.

Treiber (Drive)

- Helligkeit auf Nominalwert einstellen: Brilliance 32.
- Farbsättigung entfernen: 00.
- Roten und grünen Treiber ('Rdr' und 'Gdr') auf korrekten Weißton einstellen.

Sperrpunkt-Balance
(Cut-off-balance)

- Helligkeit auf Nominalwert einstellen: Brilliance 32.
- Farbsättigung entfernen: 00.
- Rote und grüne 'Cut-off'-Balance ('Rcu' und 'Gcu') so lange abgleichen, bis die dunklen Felder im Testbild farblos sind.

Geometrieeinstellungen

- 4 im 'Monitor service menu' drücken, um Zugang zu den Geometrieeinstellungen (Geometry adjustments) zu bekommen:

Geometry adjustments

1	Hph XX	Horizontal phase 0 - 63
2	Ham XX	Horizontal amplitude 0 - 63
3	Vam XX	Vertical amplitude 0 - 63
4	Vsc 00	Vertical s-correction 0 - 63
5	Vsh 31	Vertical shift/centering 0 - 63
6	Vsl XX	Vertical slope 0 - 63
7	EWc XX	East/West corner 0 - 63
8	EWp XX	East/West parabola 0 - 63
9	EWt XX	East/West tilt 0 - 63

- Ein Standard-Testbild (z.B. Philips) an das gewählte Format anschließen.
- Geometrieeinstellung mit den Ziffern (1 - 9) wählen und mit ▲ oder ▼ einstellen. Während des Einstellvorgangs ist es möglich, eine neue Geometrieeinstellung mit ◀◀ oder ▶▶ zu wählen. Die Einstellung mit GO speichern und evtl. eine neue Einstellung wählen, - oder das Menü mit STOP beenden. Zum Verlassen der Service-Menüs die Taste EXIT drücken.

Horizontal-Zentrierung/Phase (Hph)

- Helligkeit (Brilliance) auf Maximalwert einstellen: Brilliance 62.
- Horizontal-Amplitude auf Minimalbreite einstellen: Ham 00.
- Erforderlichenfalls das Bild bestmöglich mit 5S7 (Koordinate 7G) im Bildformat 6 zentrieren (siehe hierzu den Punkt 'Format').
- Die Bildzentrierung mit Horizontal-Phase (Hph) nachstellen.
- Horizontal-Amplitude (Ham) auf korrekte Breite einstellen (siehe hierzu den Punkt 'Format').
- Evtl. Horizontal-Phase (Hph) nachstellen.

Horizontal-Amplitude (Ham)

- Horizontal-Amplitude (Ham) auf die korrekte Breite einstellen (siehe hierzu den Punkt 'Horizontal-Zentrierung/Phase' (Hph)). Es gibt einen schwarzen Streifen (Balken) auf beiden Seiten des sichtbaren Bildes in den Bildschirm-Formaten:
  Format 1 (14:9) = 3,6 cm/1,42" auf jeder Seite.
  Format 5 (4:3) = 7,2 cm/2,84" auf jeder Seite.

Vertikal-S-Korrektur (Vsc)

- Vertikal-S-Korrektur auf 0 (Vsc 00) einstellen (in allen Formaten).

Vertikal-Zentrierung (Vsh)

- Vertikal-Zentrierung auf 31 (Vsh 31) einstellen (in allen Formaten).

Vertikal-Amplitude (Vam)

- Vertikal-Amplitude (Vam) so einstellen, daß das Bild oben paßt (siehe hierzu den Punkt 'Format').

Vertikal-Slope (Vsl)

- Vertikal-Slope/Rampe (Vsl) so einstellen, daß das Bild unten paßt (siehe hierzu den Punkt 'Format'). Die Vertikal-Amplitude (Vam) wird hierdurch beeinflußt.

Ost-West-Ecken (E/Wc)

- Ost-West-Ecken (E/Wc) auf korrekte Eckengeometrie einstellen.

Ost-West-Parabel (E/Wp)

- Ost-West-Parabel (E/Wp) auf korrekte Seitengeometrie einstellen.

Ost-West-Tilt (E/Wt)

- Ost-West-Tilt (E/Wt) auf korrekte Geometrie einstellen.

EINSTELLUNGSANWEISUNGEN

Bei den folgenden Einstellungen ist das Gerät - falls nichts Gegenteiliges angeführt ist - an ein Farbtestbild anzuschließen.
Es müssen die erforderlichen Service-Einstellungen mit Hilfe des Fernbedienungsterminals bereits vorgenommen worden sein.

Modul 2 'Video/Chroma & Teletext'

4,43-MHz-Farbträgerfalle (Saugkreis)

- Ein PAL-Farbbalken-Testbild anschließen.
- Ein Oszilloskop an Anschluß 17 des 2IC2 TDA4565 (Koordinate 6I) anschließen. Masse an Anschluß 18 des 2IC2.
- Mit 2L1 (Koordinate 5G) auf minimalen 4,43-MHz-Reste im Signal abgleichen. Diese Einstellung hat mit einem nicht-magnetischen Justierwerkzeug zu erfolgen.

Modul 5 'Deflection & EHT'

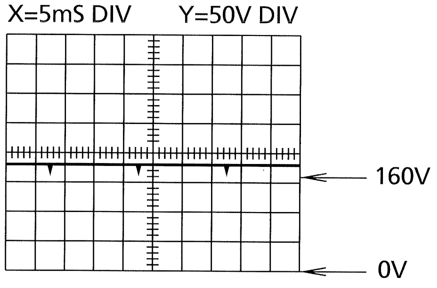
Fokussierung

- Helligkeit und Farbsättigung auf Nominalwerte (32/32) einstellen.
- Kontrast auf Maximalwert (62) einstellen.
- Auf bestmögliche Fokussierung (Bildschärfe) - ca. 10 cm/4" vom Bildschirmrand gesehen - mit Hilfe des Fokussierpotentiometer 5R50 (FOCUS) abgleichen.

G2 (Cut-off)

- Helligkeit auf Nominalwert (32) einstellen.
- AV-Stecker von der V.TAPE-Anschlußbuchse entfernen und **VTAPE** drücken.
- Mit Hilfe eines Oszilloskops den Meßpunkt der Widerstände 3R1, 3R2 oder 3R3 (Oszilloskop Bild Nr. 99) ermitteln, der die höchste Meßpulsspannung ergibt.
- Mit dem G2-(SCREEN)-Potentiometer 5R50 so lange abgleichen, bis die Meßpulsspannung bei 160 VDC liegt (absoluter Maximalpegel).
- Nach Beenden des Einstellvorgangs den AV-Stecker an die V.TAPE-Anschlußbuchse anschließen.

(99)



Alternatives G2-Einstellverfahren

Zum Erzielen einer genauen Einstellung sollte für die Einstellung unbedingt ein Oszilloskop benutzt werden.

- Helligkeit und Kontrast auf Nominalwerte (32) einstellen.
- AV-Stecker von der V.TAPE-Anschlußbuchse entfernen und **VTAPE** drücken.
- 58PE1 (Foto-Transistor) auf der Platine 'PCB 58 Display & IR' zudecken.
- Mit einem Voltmeter (Ri > 1Mohm) den Spannungsabfall über 3R1, 3R2 und 3R3 messen.
- Mit Hilfe des G2-Potentiometers 5R50 so lange abgleichen, bis eine Spannung von ~~2~~ 10 V über denjenigen der Widerstände 3R1, 3R2 oder 3R3 gemessen wird, der den geringsten Spannungsabfall aufweist.
- Nach Beenden des Einstellvorgangs den AV-Stecker an die V.TAPE-Anschlußbuchse anschließen.

Module 30 'Dolby Processing' Verstärkung

Eine Einstellung soll nur im Zusammenhang mit einem Austausch der Komponenten 30IC8, 30C1, 30C18, 30C19, 30C12, 30C13, 30C134 erfolgen.

- Den SMD-Widerstand 30R23 (Koordinate 2B) entfernen/anheben.
- Einen Tongenerator an die Lötstelle des 30R23, die zum Anschluß 53 des 30IC8 führt, über einen 10µF-Elektrolytkondensator mit + gegen die Lötstelle zeigend (siehe hierzu Bild Seite 5-1) anschließen. Masse an 'Power Link', Anschluß 2.
- Den Tongenerator zur Abgabe von 5 kHz, ca. 200 mV RMS einstellen.
- Ein AC-Voltmeter an die Lötstelle des 30R23, die zum Anschluß 53 des 30IC8 führt (AF Surround Input) anschließen, den Pegel messen und notieren.
- Das AC-Voltmeter an 30R10 (AF Surround Output) anschließen und mit 30C134 so lange abgleichen, bis der gleiche Pegel am 30R10 (Output) gemessen wird, wie am 30R23 (Input) gemessen wurde.
- Die Messung der Verstärkung mit einer Genauigkeit von ±3dB bei den Frequenzen 3 kHz und 1 kHz wiederholen bzw. überprüfen.
- Den Widerstand 30R23 erneut montieren.

Modul 40 'Picture in Picture' 'Cloche'-Filter

- Ein SECAM-Testbild (Vertikal-Farbbalken) anschließen.
- Mit 40L1 so lange abgleichen, bis optimale Farbübergange im Farbbalken erzielt werden.
- Abschließend ein SECAM-Testbild (Horizontal-Farbbalken) zwecks Kontrolle anschließen und mit Hilfe eines Oszilloskops überprüfen, ob alle Farbbalken den gleichen Pegel aufweisen.

Modul 10 'Output Amplifier' Einstellen des Tiefen/Höhen-Lautsprecherpegels

Diese Einstellung soll nur nach Austausch der Komponenten 10IC1, 10R58, 10R59 oder einer der Lautsprechereinheiten durchgeführt werden. Modul 10 'Output Amplifier' ist gleich für den rechten und den linken Kanal.

Die neue Lautsprechereinheit besitzt auf der Rückseite einen aufgedruckten Meßwert; dieser Wert ist bei der Einstellung zu benutzen.

- Den AV-Stecker von der V.TAPE-Buchse entfernen und einen Tongenerator anschließen:

AV-Stecker:	14P21 Anschluß 2	Audio R (rechts) ein
	14P21 Anschluß 4	Audio Masse
	14P21 Anschluß 6	Audio L (links) ein

- V TAPE drücken und solange auf LIST drücken, bis im Display *SPEAKER* erscheint, danach 1 drücken (Sound mode 1 - Gerätelautsprecher).
- Die Klangeinstellungen des TV-Gerätes 'Bass', 'Treble', 'Balance' müssen ungeregelt sein (0), und 'Loundness' muß abgeschaltet sein (Off). Tastenbetätigung: MENU 5 (oder 4) 2 1 und mit ▶▶, ◀◀, ▼ oder ▲ einstellen.
- Ein AC-Voltmeter an Anschluß 3 des 10P57 anschließen.
- Falls der *Höhenpegel* einzustellen ist, ist ein Signal von 10 kHz anzuschließen, und der Pegel am Eingang 10P57-3 wird mit Hilfe des Tongenerator-Ausgangspegels und mit den Lautstärketasten ∧ oder ∨ auf Beo4 auf 250 mV eingestellt.
- Falls der *Tiefenpegel* einzustellen ist, ist ein Signal von 1 kHz anzuschließen, und der Pegel am Eingang 10P57-3 wird mit Hilfe des Tongenerator-Ausgangspegels und mit den Lautstärketasten ∧ oder ∨ auf Beo4 auf 250 mV eingestellt.
- Ein AC-Voltmeter über den Ausgang der aktuellen Einheit anschließen (die Lautsprechereinheiten brauchen während des Einstellvorgangs nicht angeschlossen zu sein):

Tiefen (Bass):	10P60-1	Bass out
	10P60-2	N.C.
	10P60-3	Bass ground
Höhen (Treble):	10P60-4	Treble out
	10P60-5	Treble ground

- Jetzt so lange abgleichen, bis die Spannung am Lautsprecherausgang mit der Spannung in der nachstehenden Lautsprecherpegel-Tabelle mit Hilfe des auf der Rückseite der Lautsprechereinheit aufgedruckten Wertes übereinstimmt.

Tiefen-Einstellung: 10R59 (Koordinate 1E)
Höhen-Einstellung: 10R58 (Koordinate 1D)

Aufgedruckter dB-Wert	Tiefen (Bass)	Höhen (Treble)
+2,00 dB	1,41 V	2,04 V
+1,75 dB	1,46 V	2,10 V
+1,50 dB	1,50 V	2,16 V
+1,25 dB	1,54 V	2,23 V
+1,00 dB	1,59 V	2,29 V
+0,75 dB	1,63 V	2,36 V
+0,50 dB	1,68 V	2,43 V
+0,25 dB	1,73 V	2,50 V
0,00 dB	1,78 V	2,57 V
- 0,25 dB	1,83 V	2,65 V
- 0,50 dB	1,88 V	2,72 V
- 0,75 dB	1,94 V	2,80 V
- 1,00 dB	2,00 V	2,88 V
- 1,25 dB	2,06 V	2,97 V
- 1,50 dB	2,12 V	3,05 V
- 1,75 dB	2,18 V	3,14 V
- 2,00 dB	2,24 V	3,24 V

Austausch von Modul 10 'Output Amplifier'

Nach Austausch des Moduls 10 'Output Amplifier' sind die Ausgänge (Tiefen und Höhen) auf den Nominalwert (0,00 dB) entsprechend des Einstellvorgangs für das 'Einstellen des Tiefen/Höhen-Lautsprecherpegels' abzugleichen. Modul 10 'Output Amplifier' ist gleich für den rechten und den linken Kanal.

Modul 12 'IF'

Eine Einstellung soll nur nach Austausch von Modul 12 'IF' oder 12IC4 TDA9815 (Koordinate 2A) durchgeführt werden.

Test-Stecker 1P89:

Anschluß 1	Masse (Ground)
Anschluß 2	5 V
Anschluß 3	'LF' links (CH SEP)
Anschluß 4	V_{AFC}
Anschluß 5	'LF' rechts
Anschluß 6	V_{AGC} Takeover

- Ein Antennensignal von bekannter Frequenz (XXX.25 MHz), das A2-Stereoton-Modulation enthält, anschließen.
- Im 'TV service setup'-Menü AFC 'Off' wählen; Tastenbetätigung: TV MENU 5 (oder 4) 0 0 GO 2 ▸▸ ▼ GO.
- 'TV tuning'-Menü wählen; Tastenbetätigung: STOP 1 1 oder TV MENU 5 (oder 4) 1 1.
- Den Tuner auf die bekannte Frequenz einstellen; Tastenbetätigung: X X X (Zifferneingabe) ▸▸, und eine Programmnummer mit X X GO wählen.

Automatische Verstärkungsregelung (AFC)

- Ein DC-Voltmeter an Anschluß 4 (V_{AFC}) des 1P89 anschließen.
- Mit 12L5 (Koordinate 2B) mittels eines nicht-magnetischen Trimmschlüssels so lange abgleichen, bis die Spannung am 1P89-4 (V_{AFC}) = 1,95 V ± 0,1 V.

'AGC Takeover'

- Den Antennensignalpegel auf 2 mV einstellen.
- Ein DC-Voltmeter an Anschluß 6 (V_{AGC} Takeover) des 1P89 anschließen.
- Mit 12R112 (Koordinate 2B) so lange abgleichen, bis die Spannung am 1P89-6 (V_{AGC} Takeover) = 7,3 V ± 0,1 V.

Kanaltrennung (CH SEP)

- Ein Oszilloskop an Anschluß 3 des 1P89 anschließen.
- Mit 12R113 (Koordinate 2B) auf minimales Übersprechen einstellen.

REPARATURTIPS
Service-Modus

Der Service-Modus setzt sich aus 2 Bereichen zusammen: 'Service menu' und 'Bus ignore mode'.

'Service menu'

Im Service-Menü besteht u.a. die Möglichkeit für Bild- und Geometrieeinstellungen; siehe hierzu den Abschnitt 'Service-Einstellungen mit Beo4'. In der folgenden Beschreibung wird das Beo4-Terminal für die Bedienung benutzt. Zugang zum Service-Menü:

- Tastenbetätigung: TV MENU und anschließend die 'Setup'-Zeile mit der Taste ▼ wählen und dann GO 0 0 GO drücken. Durch Drücken der Taste STOP ist es möglich, in den Menüs rückwärts zu schalten.

Zum Verlassen des Service-Modus die Taste ● drücken.

```
Service menu

1   Monitor
2   TV-tuner
3   V.Tape
```

Im Service-Menü kann die Quelle gewählt werden, über die Informationen benötigt werden, oder die nachzustellen/aufzustellen ist.

'Monitor' wählen: Tastenbetätigung 1

```
Monitor service menu

1   Monitor information
2   Service counters
3   Picture adjustments
4   Geometry adjustments
5   Text Registers
```

Im Monitor-Service-Menü kann zwischen den nachstehenden Informationen gewählt werden:
(Die Bild- und Geometrie-Einstellungen sind im Abschnitt über die Einstellungen beschrieben).

'Monitor information menu': Tastenbetätigung 1

```
Monitor information

06 IC1:       (AP) SW     1.0
14 IC13:      (FEP) SW    1.0
Type                      1811101
Serial no.                12345678
Last TV error             NO
Last ML/SL error          NO
```

- Software-Version Nr.
- Typ- und Serien-Nr.
- Last TV error
- Last ML/SL error

'Last Error'

Das TV-Gerät kann gewisse Fehlertypen erkennen und diese im Bildschirmmenü darstellen.

Der erste Fehlercode bezieht sich auf TV-Fehler.
Es können die folgenden Fehlertypen dargestellt werden:
Last TV error NO = Keine Fehlerregistrierung.
Last TV error xx - 1 = Fehler I^{2}C-Bus 1.
Last TV error xx - 2 = Fehler I^{2}C-Bus 2.
Last TV error DF = Datenfehler (EEPROM 6IC4 möglicherweise fehlerhaft).
Last TV error PF = 'Power Fail' (TDA9162 2IC7 kann im TV-Modus nicht anlaufen).

Der zweite Fehlercode bezieht sich auf Fehler im Master Link-System.
Es können die folgenden Fehlertypen dargestellt werden:
Last ML/SL error NO = Keine Fehlerregistrierung.
Last ML/SL error CI = Adreßkonfiguration unmöglich.
Last ML/SL error TD = 'ML Data' auf 'Low' gezogen.
Last ML/SL error TU = 'ML Data' auf 'High' gezogen.
Last ML/SL error — = Andere nicht-definierbare Fehlermöglichkeiten.

Nach Reparatur eines Fehlers, bei dem ein Fehlercode im Display angezeigt gewesen ist, ist der Fehlercode zu löschen. Dies erfolgt durch Drücken der Taste GO im 'Monitor information'-Menü.

I^{2}C-Busfehler

Ein I^{2}C-Busfehler bewirkt, daß die Kommunikation auf dem Bus ausfällt, wenn der Mikrocomputer versucht, mit der betreffenden Adresse zu kommunizieren. In den meisten Fällen bedeutet dies, daß der adressierte IC fehlerhaft ist, es können aber auch eine benachbarte Komponente des IC oder andere Komponenten auf dem Bus fehlerhaft sein.

Adressen bei I^{2}C-Busfehlern:
'Last error' auf Bus 1

D0 - 1	14IC40, MK41T56 Zeituhr.
88 - 1	2IC4, TDA4680 Videoprozessor.
8A - 1	2IC7, TDA9162 Farbdetektor & Synk.-Prozessor.
4A - 1	41IC2, PCF8574 I^{2}C I/O-Expander.
2E - 1	40IC5, SDA9188 Bild-im-Bild-Prozessor.

'Last error' auf Bus 2

C0 - 2	1TU1, TV-Tuner.
84 - 2	1IC3, TDA8417 A2-Stereo-Decoder.
B6 - 2	31IC7, CF70088 NICAM-Stereo-Decoder.
C6 - 2	20TU1, Satelliten-Tuner (SXT2001CDI).
C4 - 2	20TU1, Satelliten-Tuner (SXT2041CD).
22 - 2	2IC6, SDA5273 Videotext-(Teletext)-Decoder.
80 - 2	14IC10, TDA7314S Klangregelungen.
90 - 2	14IC3, TEA6425 Videoschalter.
94 - 2	14IC4, TEA6425 Videoschalter.
96 - 2	14IC2, TEA6425 Videoschalter.
88 - 2	30IC7, TDA7318 Tonprozessor.
4C - 2	30IC4, PCF8574 I^{2}C I/O-Expander.
4E - 2	30IC3, PCF8574 I^{2}C I/O-Expander.

Datenfehler (Data failure)

Falls im EEPROM (6IC4) ein Fehler entsteht, so daß es nicht möglich ist, Geometrie- und Bilddaten für das TV-Gerät auszulesen, wird der Mikrocomputer die fehlenden Daten durch 'Default'-Daten ersetzen, die im PROM (6IC1) gespeichert sind.

Stromunterbrechung (Power fail)

Falls 2IC7 (TDA9162) im Video-Modus nach 20 Versuchen nicht anlaufen kann, wird das TV-Gerät abgeschaltet. Diese Situation kann auf etwaige Fehler in den Ablenkschaltkreisen zurückzuführen sein.

'Last ML/SL error CI'

Fehler bei der Adreßkonfiguration. Keine Adreßzuordnung, weil an das Link zu viele Einheiten angeschlossen worden sind.

- Alle Einheiten vom Link trennen und sie wieder eine nach der anderen anschließen. Dabei nicht vergessen, daß dies ebenfalls für das 6polige Flachkabel zwischen TV-Gerät und VTR-Einheit gilt.

'Last ML/SL error TD'

Das Link wurde auf 'Low' gezogen. Dieser Fehler kann infolge eines physischen Kurzschlusses im Link, in den Link-Treibern oder im ML 'Master/Source'-Schaltkreis des TV-Gerätes entstehen.

- Überprüfen, ob am Anschluß 15 des 14IC13 (ML M/S) Impulse vorhanden sind. Die Frequenz muß bei ca. 1,5 ms liegen (TV-Gerät Master).
- Die Einheiten jeweils eine nach der anderen vom Link trennen und gleichzeitig überprüfen, ob über das Link kommuniziert wird. Dabei nicht vergessen, daß dies ebenfalls für das 6polige Flachkabel zwischen TV-Gerät und VTR-Einheit gilt.

'Last ML/SL error TU'

Das Link wurde auf 'High' gezogen. Der Fehler ist entweder auf einen zu niedrig gewordenen 'Pull-up'-Widerstand des Systems oder auf eine Störung der Link-Treiber zurückzuführen.

- Das TV-Gerät von der externen Link-Verknüpfung trennen. Auch das 6polige Flachkabel zwischen TV-Gerät und VTR-Einheit unterbrechen. Dann das TV-Gerät einschalten und überprüfen, daß ein Telegramm von ca. 15 ms, gemessen am Anschluß 13 des 14IC13 (ML TRANSMIT), innerhalb von 3-4 Sekunden hinausgegeben wird. Es sollte möglich sein, dasselbe Signal am Anschluß 14 des 14IC13 (ML RECEIVE) zu messen - jedoch mit einer Verzögerung von 10-15 µs.

'Text Registers' im 'Monitor service menu' wählen: Tastenbetätigung **· 5**

```
Test Register setup

R01  R02  R03  R04  R05  R06  R07  R08
 5    11   0    0    0    0    0    0
R09  R10
 0    0
```

Gruppenlaufzeitfehler können in gewissen Kabelantennenanlagen den Empfang von Videotext (Teletext) stören. Diese können verhindert werden, falls in Reihe mit dem CVBS-Signal für den Videotext-Decoder ein Filter eingesetzt wird.
Bei den Ziffern unter den Register-Nummern R01 - R10 handelt es sich um Programmnummern. Sind alle Ziffern = 0, sind bei keiner der Programmnummern Filter eingesetzt worden.
Ist das Einsetzen eines Filters bei einer Programmnummer erwünscht, wird ein Register durch Drücken von ◀◀ / ▶▶ gewählt, gefolgt von der gewünschten Programmnummer. Zum Beenden ist die Taste **GO** zu drücken.
In dem gezeigten Beispiel wurden Filter bei Programm 5 und 11 eingesetzt. Das Filter wird erst beim nächstfolgenden Schalten zum betreffenden Programm eingeschaltet.

'Service counters' im 'Monitor service menu' wählen: Tastenbetätigung **2**

```
Monitor service counters

Standby (days)          0000
Audio mode (days)       0000
Video mode (days)       0000
On/Off (times ★ 10)     0000
```

'On/Off (times ★ 10)' zeigt an, wie oft das TV-Gerät in 'Standby' geschaltet wurde. Die Zahl wird in ganzen 10'ern angegeben. Enthält die Zahl mehr als 4 Ziffern, so werden die 4 niederstwertigen Ziffern angegeben (z.B. 12834 wird als 2834 angegeben).
Die anderen im Menü dargestellten Zeiten werden in ganzen Tagen angegeben.

'TV-tuner' im 'Service menu' wählen: Tastenbetätigung **2**

```
TV service setup

Tuner system                  AFC
1                             On

Low tuning range              High tuning range
45                            860

Lower band limit              Upper band limit
170                           450

Vhf-1 const       Vhf-2 const       Uhf const
162               148               49
```

Im 'TV service setup'-Menü sind nur die 'Tuner system'- und 'AFC'-Felder zu benutzen. Die übrigen Felder sind für werkseitige Zwecke bestimmt, und die darin enthaltenen Werte dürfen nicht geändert werden.
'Tuner system':
Der Zahlenwert in diesem Feld gibt an, für welches CTV-System der betreffende ZF-Teil vorgesehen ist.
Falls die 'Tuner & ZF'-Platine (PCB) zwecks Empfangs eines anderen CTV-Systems ausgetauscht wird, muß der Zahlenwert geändert werden.
Die Zahlenwerte für die verschiedenen Systeme sind die folgenden:
B/G = 1
L/L' = 2
M = 4
D/K = 8
I = 16
Der Zahlenwert für Systemkombinationen erhält man durch Addieren der diesbezüglichen Werte.
Die Zahlenwerte für die ZF-Varianten im BeoVision Avant sind die folgenden:
B/G = 1
B/G/L/L' = 3
I = 16
B/G/L/L'/I = 19
B/G/M/D/K/I = 29
Der Zahlenwert wird mit der Taste **GO** gespeichert.

'AFC On/Off' ist für Einstellungen vorgesehen, kann aber auch in anderen Situationen nützlich sein. Zum Bewegen des Cursors die Tasten ◀◀ / ▶▶ drücken. Zum Schalten zwischen 'On/Off' die Tasten ▲ / ▼ drücken.
'AFC Off' kann nicht gespeichert werden. Nach 'Standby' befindet sich AFC immer in Stellung 'On'.

'V.Tape' im 'Service menu' wählen: Tastenbetätigung 3; danach 'Information' im 'V.Tape service menu' wählen: Tastenbetätigung 1.
Im 'V.Tape information menu' kann man u.a. die Software-Version des VTR sehen.

Der 'V.Tape service'-Modus ist in der Serviceanleitung für BeoVision Avant VTR beschrieben.

'Bus ignore'-Modus

Falls ein Fehler im I^2C-Bus-System entsteht, der bewirkt, daß das TV-Gerät bei jedem Einschaltversuch in 'Standby' schaltet, ist es möglich, das TV-Gerät so zu starten, daß der Fehler ignoriert wird:
- Das TV-Gerät muß in 'Standby' stehen.
- Die 2polige Steckverbindung P84 (ignore) koordinate 7M auf 'AV Switch PCB14' kurzschließen.
- Wenn es möglich ist, wird das TV-Gerät jetzt bei Ignorierung von Bus-Fehlern starten. Falls es nicht möglich ist, das TV-Gerät zu starten, ist der Fehler wahrscheinlich in 6IC3, 14IC13, 26IC3 (falls ein 'Positioner' montiert ist) oder in den benachbarten Komponenten der genannten IC's zu suchen.

Optionen

Das TV-Gerät ist für drei verschiedene Optionen programmierbar.

Option 0 = IR-Empfänger des TV-Gerätes abgeschaltet.

Option 1 = Video-System und Audio-System im selben Zimmer aufgestellt.

Option 2 = Video-System und Audio-System in verschiedenen Zimmern aufgestellt.

Programmierungsbeispiel mit Beo4:
- Das TV-Gerät muß in 'Standby' stehen.
- Die Taste ● gedrückt halten und LIST drücken, danach GO drücken und sooft LIST drücken, bis im Beo4-Display 'V.OPT' erscheint. Jetzt die Zahl für die gewünschte Option eingeben.

Werkseitig ist das Gerät für Option 1 programmiert.

Sound Output PCB10 & ABL PCB11

Bei Wartungsarbeiten an den Platinen 'Sound Output PCB10' und 'ABL PCB11' kann es vorteilhaft sein, das Kühlblech abzumontieren, weil es einige der Komponenten abdeckt. Der STK-Ausgangs-IC kann gefahrlos ohne Kühlblech bei niedriger Aussteuerung für eine kürzere Zeit betrieben werden.

SMPS auf PCB4

Bei Fehlern im Haupt-'SMPS'-Netzteil auf PCB4 können die nachstehenden praktischen Hinweise bei Reparaturarbeiten von Nutzen sein.

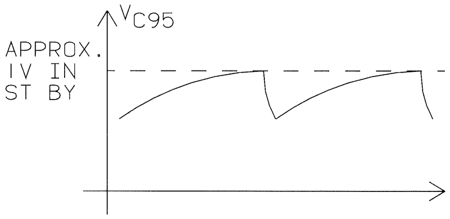
Falls TR41 fehlerhaft ist (was am schnellsten mit einem Ohm-Meter überprüft wird), sollten auch die Transistoren TR84, TR85 und TR86 ausgetauscht werden.
Falls TR41 nicht fehlerhaft ist, sollte folgendes überprüft werden:

1. Die Spannung am C4 muß über ca. 250 V liegen. Ist dies nicht der Fall, so kann die Sicherung oder D1 fehlerhaft sein.

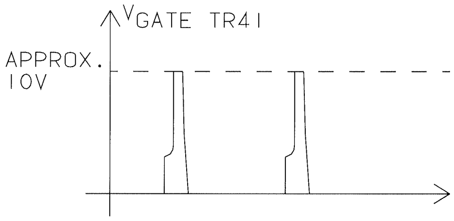
2. Die Versorgung am C83 sollte während des Anlaufvorgangs bei ca. 6 V liegen. Wenn die Spannung niedriger ist, wird das Netzteil nicht anlaufen. Der Grund mag sein, daß eine fehlerhafte Komponente von der Versorgung zu viel Strom zieht.

3. Falls TR61 kurzgeschlossen ist, kann das Netzteil nicht anlaufen. Die Spannung am C83 muß bei ca. 6 V liegen.

4. Falls die Spannung am C95 keine DC-Spannung ist, sondern wie unten dargestellt aussieht, wird der Sicherungsschaltkreis TR91 u.a.m. in Tätigkeit sein. Die Ursache hierfür kann sein, daß ein Elektrolyt oder eine Diode an einer der Versorgungsspannungen kurzgeschlossen ist, oder daß die Belastung des Netzteils zu hoch ist. Bei unterbrochener L91 tritt der gleiche Fehler auf.



5. 'Drain' des TR41 unterbrechen (J5 anheben). Eine externe DC-Versorgung von 15-20 V an C83 anschließen und das TV-Gerät ans Netz anschließen. Der Oszillator muß jetzt bei 20 kHz arbeiten. Es müssen ca. 1,3 V DC am C95 anliegen, und nicht wie oben dargestellt.
   Es muß jetzt eine Rechteckspannung am Kollektor des TR83 stehen. Die Rechteckspannung wird in TR84 verstärkt und anschließend dem Gate des TR41 zugeführt.

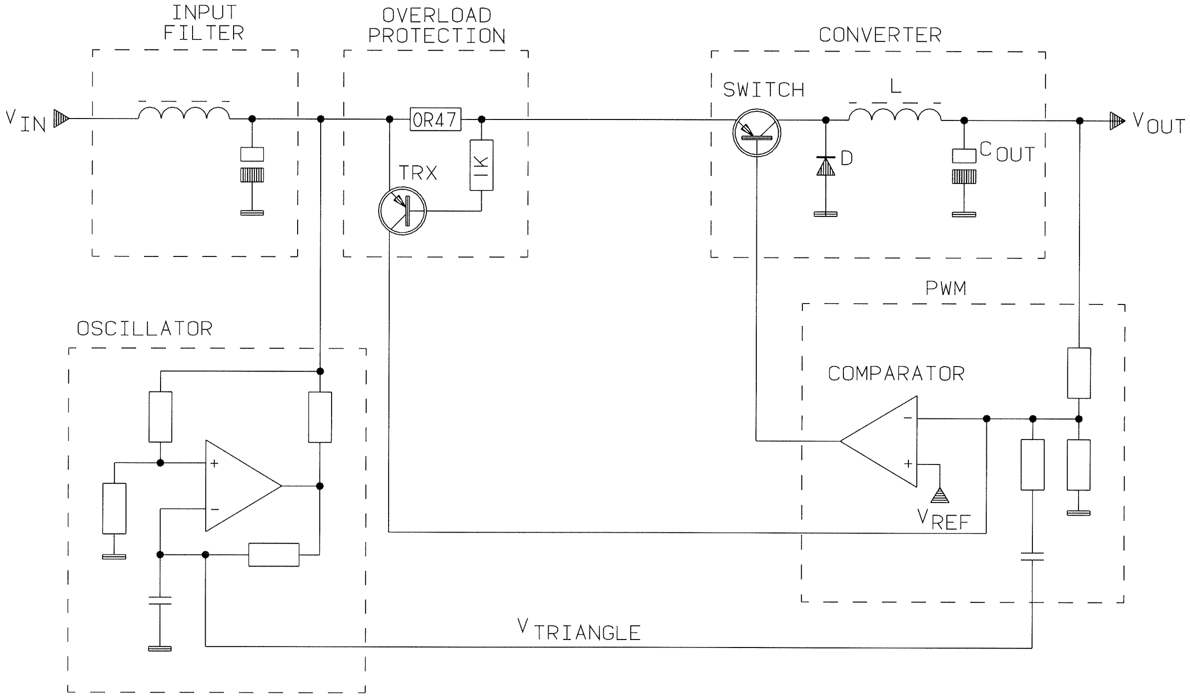


6. Falls das TV-Gerät nicht im Audio-Modus aus 'Standby' gestartet werden kann, ist zu überprüfen, daß Anschluß 2 des P42 auf 'High' schaltet.

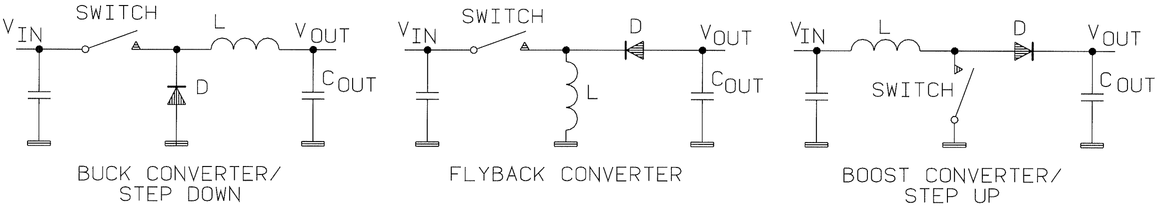
50 kHz SMPS

In BeoVision Avant sind drei kleine 'SMPS'-Netzteile vorgesehen. Sie befinden sich auf den Platinen 'AV Switch PCB14', 'Satellite PCB20' bzw. 'Dolby Surround PCB30'.
Der Aufbau der drei 'SMPS'-Netzteile basiert auf drei verschiedenen Prinzipien; sie weisen jedoch die folgenden gemeinsamen Grundzüge auf:

- Oszillator.
- Feedback/Impulsbreiten-Modulator (PWM).
- Eingangsfilter.
- Sicherungsschaltkreis.
- Konverter (Switch).


INPUT FILTER
OVERLOAD PROTECTION
CONVERTER
V_{IN}
0R47
1K
TRX
SWITCH
L
D
C_{OUT}
V_{OUT}
PWM
OSCILLATOR
COMPARATOR
V_{REF}
$V_{TRIANGLE}$

Die drei Prinzipien sind nachstehend gezeigt:


V_{IN}
SWITCH
L
V_{OUT}
D
C_{OUT}
BUCK CONVERTER/ STEP DOWN
V_{IN}
SWITCH
D
V_{OUT}
L
C_{OUT}
FLYBACK CONVERTER
V_{IN}
L
D
V_{OUT}
SWITCH
C_{OUT}
BOOST CONVERTER/ STEP UP

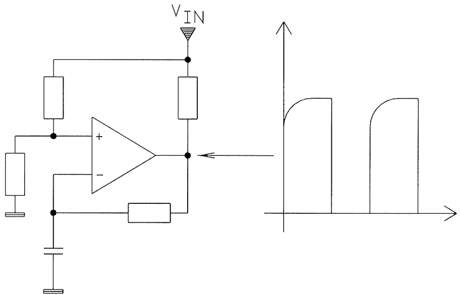
Fehlertips für den Konverter

- Fehlerhafter Schalter → Keine Vout oder Vout = Vin.
- Fehlerhafte Diode → Keine Vout oder Vout = Vin.

Allgemeine Fehlersuchtips

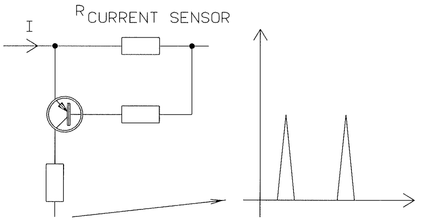
1. Die Spannung am Kollektor des Schalttransistors überprüfen. Hier muß eine Rechteckspannung anstehen, vielleicht mit einigen kleinen Schwingungen. Die Frequenz der Impulse liegt bei ca. 50 kHz. Falls hier eine DC-Spannung ansteht, arbeitet das 'SMPS'-Netzteil nicht.
   Der Oszillator, der Schalttransistor oder die Konverterdiode kann fehlerhaft sein.

2. Überprüfen, daß der Oszillator mit ca. 50 kHz arbeitet; ist dies nicht der Fall, kann der Oszillator fehlerhaft sein, oder der Sicherungsschaltkreis ist in Tätigkeit. Der Oszillator in allen kleinen 'SMPS'-Netzteilen ist identisch aufgebaut, und zwar mit einem Komparator.



OSCILLATOR

3. Überprüfen, ob der Sicherungsschaltkreis in Tätigkeit ist. Ist dies der Fall, so kann dies auf zu hohe Belastung oder auf eine fehlerhafte Komponente im 'SMPS' zurückzuführen sein. Die Belastung unterbrechen, um festzustellen, wo der Fehler liegt. Der Sicherungsschaltkreis liefert einen Impuls, wenn der Strom im Schalttransistor zu hoch wird. Wenn dies geschieht, sperrt der Schalttransistor, und erst nach Verlauf von ca. 20 µs schaltet er wieder.



OVERLOAD PROTECTION ACTIVE

REGLAGES DE MAINTENANCE AVEC LE Beo4

La télécommande Beo4 du BeoVision Avant permet de sélectionner six formats d'image. Une fois le format choisi, les paramètres applicables aux réglages d'image et de géométrie peuvent être mémorisés dans le mode de maintenance. Les paramètres de chacun des six formats font l'objet d'une mémorisation spécifique. Se reporter le cas échéant au guide succinct de maintenance (désigné par l'abréviation B.O.G) pour l'utilisation générale.

Reset (remise à l'état initial)

Régler la luminosité, la saturation des couleurs et le contraste sur leurs valeurs nominales afin de pouvoir les rappeler à l'aide de la touche *RESET* (utiliser éventuellement la fonction ADD, voir B.O.G.) :

- Taper TV MENU 5 (ou 4) 3.

Brilliance	Colour	Contrast
32	32	44

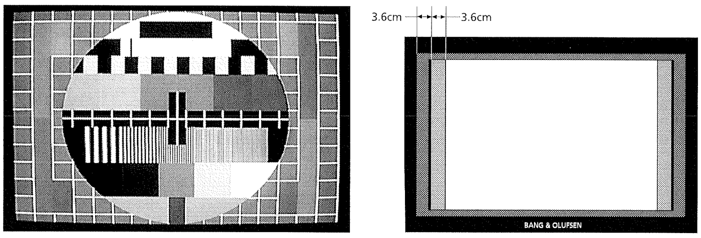
- Régler avec ◀◀, ▶▶, ▲ ou ▼, revenir en arrière avec STOP. Le cas échéant, mémoriser les valeurs en appuyant sur GO.

Format

Chacun des six formats d'image demande un réglage spécifique dans le mode de maintenance. La sélection du format s'effectue avec un Beo4 :

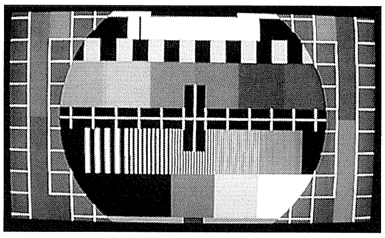
- Raccorder une mire standard 4/3 (p. ex. Philips).
- Taper TV et appuyer sur LIST jusqu'à ce que l'afficheur indique *FORMAT.*
- 1 montre une mire 14/9 Bang & Olufsen optimisée en présence d'un signal standard 4/3 :

FORMAT 1



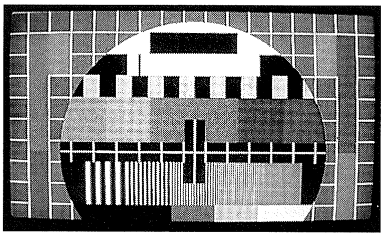
- 2 montre une mire 16/9 plein écran en présence d'un signal standard 4/3 (avec barre noire en haut et en bas) :

FORMAT 2



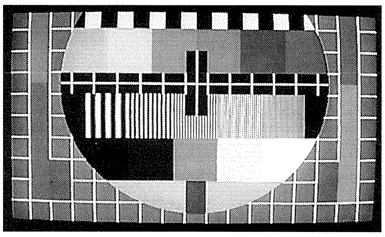
- 3 montre une mire 16/9 plein écran en présence d'un signal standard 4/3 (avec barre noire en bas de la mire) :

FORMAT 3



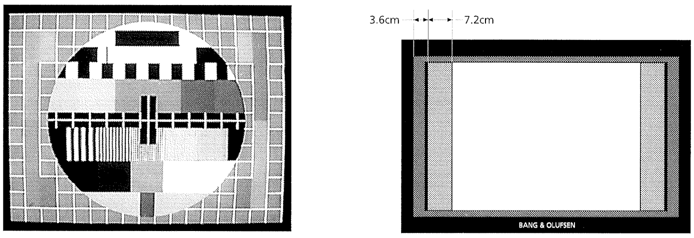
- 4 montre une mire 16/9 plein écran en présence d'un signal standard 4/3 (avec dans une barre noire en haut de la mire) :

FORMAT 4



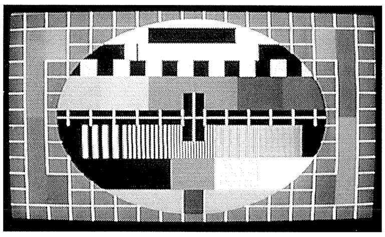
- 5 montre une mire 4/3 standard en présence d'un signal standard 4/3 :

FORMAT 5

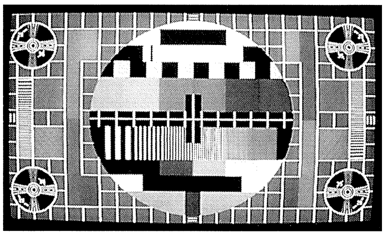


- 6 montre une mire 16/9 plein écran en présence d'un signal 16/9 écran large :

FORMAT 6 4/3



FORMAT 6 16/9



Service mode (mode de maintenance)

Après avoir sélectionné le format souhaité, amener le téléviseur en MODE DE MAINTENANCE pour accéder au menu de maintenance :

- Taper TV MENU, sélectionner l'option «Setup» avec la touche ▼ et entrer GO 0 0 GO.

Service menu

1 Monitor
2 TV tuner
3 V.Tape

- Taper 1 pour accéder aux réglages concernant le moniteur.

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

Picture adjustments (réglages de l'image)

- Taper 3 dans le menu de maintenance dédié au moniteur pour accéder aux réglages de l'image.

Picture adjustments

1	Rdr XX	Red drive 0 - 63
2	Gdr XX	Green drive 0 - 63
3	Rcu XX	Red cut-off balance 0 - 63
4	Gcu XX	Green cut-off balance 0 - 63

- Raccorder une mire standard 4/3 (p. ex. Philips) au format sélectionné.
- Sélectionner l'option souhaitée à l'aide des chiffres 1 à 4 et régler avec ▲ ou ▼. Ce faisant, il est possible d'opter pour un autre réglage d'image en appuyant sur ◀◀ ou ▶▶. Mémoriser le réglage effectué en appuyant sur GO, sélectionner un autre réglage ou sortir du menu en tapant STOP. Quitter les menus de maintenance en tapant EXIT.

Drive (signaux chroma)

- Régler la luminosité sur sa valeur nominale : «Brilliance 32».
- Régler la saturation des couleurs sur 00.
- Régler les signaux chroma rouge (Rdr) et vert (Gdr) sur le blanc de référence adéquat.

Cut-off balance (balance de coupure)

- Régler la luminosité sur sa valeur nominale (32).
- Régler la saturation des couleurs sur 00.
- Régler la balance de coupure des signaux rouge (Rcu) et vert (Gcu) pour que les zones foncées de la mire soient incolores.

Geometry adjustments (réglages de la géométrie)

- Taper 4 dans le menu de maintenance dédié au moniteur pour accéder aux réglages de la géométrie.

Geometry adjustments

1	Hph XX	Horizontal phase 0 - 63
2	Ham XX	Horizontal amplitude 0 - 63
3	Vam XX	Vertical amplitude 0 - 63
4	Vsc 00	Vertical s-correction 0 - 63
5	Vsh 31	Vertical shift/centring 0 - 63
6	Vsl XX	Vertical slope 0 - 63
7	EWc XX	East/West corner 0 - 63
8	EWp XX	East/West parabola 0 - 63
9	EWt XX	East/West tilt 0 - 63

- Raccorder une mire standard (p. ex. Philips) au format choisi.
- Sélectionner le réglage de géométrie souhaité à l'aide des chiffres 1 à 9 et régler avec ▲ ou ▼. Ce faisant, il est possible d'opter pour un autre réglage de géométrie en appuyant sur ◀◀ ou ▶▶. Mémoriser le réglage effectué en appuyant sur GO, sélectionner un autre réglage ou sortir du menu en tapant STOP. Quitter les menus de maintenance en tapant EXIT.

Centrage horizontal/phase (Hph)

- Régler la luminosité sur sa valeur max. : «Brilliance 62».
- Régler l'amplitude horizontale sur la largeur min. : Ham 00.
- Le cas échéant, centrer du mieux possible la mire du format 6 (voir paragraphe «Format») à l'aide de 5S7 (coordonnées 7G).
- Centrer la mire en corrigeant la phase horizontale (Hph) pour effectuer le réglage fin.
- Régler l'amplitude horizontale (Ham) sur la largeur adéquate (voir paragraphe «Format»).
- Corriger si nécessaire le réglage de la phase horizontale (Hph).

Amplitude horizontale (Ham)

- Régler l'amplitude horizontale (Ham) sur la largeur adéquate (voir paragraphe «centrage horizontal/phase (Hph)»). Une barre noire borde les deux côtés de la mire visible sur les formats suivants :
  Format 1 (14/9) = 3,6 cm/1,42" de chaque côté.
  Format 5 (4/3) = 7,2 cm/2,84" de chaque côté.

Correction S verticale (Vsc)

- Régler la correction S verticale sur 0 (Vsc 00) (pour l'ensemble des formats).

Centrage vertical (Vsh)

- Régler le centrage vertical sur 31 (Vsh 31) (pour l'ensemble des formats).

Amplitude verticale (Vam)

- Régler l'amplitude verticale (Vam) pour que le haut de la mire soit conforme aux indications du paragraphe «Format».

Pente verticale (Vsl)

- Régler la pente/rampe verticale (Vsl) pour que le bas de la mire soit conforme aux indications du paragraphe «Format». Ce réglage agit sur l'amplitude verticale (Vam).

Coins est/ouest (E/Wc)

- Régler les coins est/ouest (E/Wc) pour obtenir une géométrie correcte dans les coins.

Parabole est/ouest (E/Wp).

- Régler la parabole est/ouest (E/Wp) pour obtenir une géométrie correcte sur les côtés.

Distorsion est/ouest (E/Wt)

- Régler la distorsion est/ouest (E/Wt) pour obtenir une géométrie correcte.

GUIDE DE REGLAGE

Sauf mention contraire, raccorder une mire de couleurs standard pour effectuer les réglages suivants.
Il convient d'avoir effectué préalablement les réglages de maintenance avec la télécommande.

Module 2 «Video/Chroma & Teletext»
Filtre chroma 4,43 MHz

- Raccorder une mire de couleurs PAL.
- Raccorder un oscilloscope à la borne 17 de 2IC2 (TDA4565, coordonnées 6I). Mettre la borne 18 de 2IC2 à la masse.
- A l'aide d'un outil non magnétique, régler 2L1 (coordonnées 5G) pour obtenir une fréquence résiduelle minimale de 4,43 MHz dans le signal.

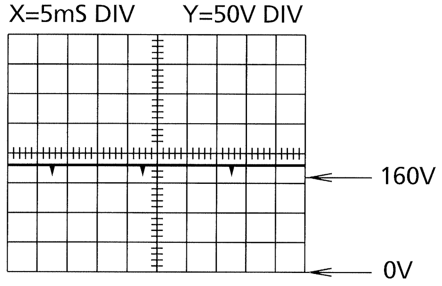
Module 5 «Deflection & EHT»
Concentration

- Régler la luminosité et la saturation des couleurs sur leurs valeurs nominales (32 et 32).
- Régler le contraste sur sa valeur maximale (62).
- Se placer à 10 cm/4" du bord de l'écran et régler, à l'aide du potentiomètre 5R50 (FOCUS), pour obtenir une concentration optimale.

G2 (Cut-off)

- Régler la luminosité sur sa valeur nominale (32).
- Débrancher la fiche A/V de la prise V.TAPE et appuyer sur **V TAPE**
- A l'aide d'un oscilloscope, définir le point de mesure de 3R1, 3R2 et 3R3 (oscillogramme n° 99) présentant la plus forte tension d'impulsion d'essai.
- Régler le potentiomètre 5R50 (SCREEN) G2 pour obtenir une tension continue d'impulsion d'essai de 160 V (niveau max. absolu).
- Rebrancher la fiche A/V dans la prise V.TAPE à l'issue du réglage.

(99)



Autre possibilité de réglage G2

Il est conseillé de suivre la procédure mettant en oeuvre un oscilloscope pour obtenir un réglage précis.

- Régler la luminosité et le contraste sur leurs valeurs nominales (32).
- Débrancher la fiche A/V de la prise V.TAPE et appuyer sur **V TAPE**
- Recouvrir la cellule 58PE1 (phototransistor) de la carte «Display & IR PCB 58».
- Utiliser un voltmètre (Ri > 1 Mohm) pour mesurer la chute de tension au travers de 3R1, 3R2 et 3R3.
- A l'aide du potentiomètre 5R50 G2, régler pour obtenir une tension de 2 V au travers de la résistance présentant la chute de tension la plus faible (3R1, 3R2 ou 3R3).
- Rebrancher la fiche A/V dans la prise V.TAPE à l'issue du réglage.

Module 30, traitement Dolby Gain

- Ne régler que lors du remplacement des composants suivants : 30IC8, 30C1, 30C18, 30C19, 30C12, 30C13 et 30C134.
- Déposer ou soulever la résistance 30R23 montée en surface (coordonnées 2B).
- Raccorder un oscillateur BF à la pastille de soudure de 30R23 reliée à la borne 53 de 30IC8. Pour ce faire, insérer un condensateur électrolytique de 10 µF dont la borne positive est orientée vers la pastille (se reporter au schéma de réglage, page 5-1). Mettre à la masse la borne 2 de la liaison Power Link.
- Régler l'oscillateur BF pour qu'il génère une tension de 200 mV eff. env. à 5 kHz.
- Raccorder un voltmètre AF à la pastille de soudure de 30R23 reliée à la borne 53 de 30IC8 (entrée «AF surround»), lire le niveau et le noter.
- Raccorder le voltmètre AF à la cellule 30R10 (sortie «AF surround»). Régler 30C134 pour obtenir à la sortie (30R10) le niveau mesuré à l'entrée (30R23).
- Répéter l'opération ou contrôler que la mesure du gain avoisine ± 3 dB à 3 et 1 kHz.
- Remonter 30R23.

Module 40 «Picture in Picture» Filtre en cloche

- Raccorder une mire SECAM (barres de couleur verticales).
- Régler 40L1 pour obtenir une graduation optimale des couleurs des barres.
- Contrôler en raccordant le cas échéant une mire SECAM (barres de couleur horizontales). A l'aide d'un oscilloscope, vérifier que toutes les barres de couleur présentent le même niveau.

Module 10 «Output Amplifier»
Réglage du niveau sonore des HP de grave et d'aigu

Ne régler qu'en cas de remplacement de 10IC1, 10R58 ou 10R59, voire en cas de changement d'une des enceintes. Le module 10 «Output Amplifier» est identique pour les voies droite et gauche.

La valeur calibrée de l'enceinte neuve est estampée sur la face arrière. Pour le réglage, se référer à cette valeur.

- Débrancher la fiche A/V de la prise V.TAPE et la raccorder à un oscillateur BF :

14P21 borne 2	Entrée audio R (droite)
14P21 borne 4	Masse audio
14P21 borne 6	Entrée audio L (gauche)

- Taper **VTAPE**, appuyer sur **LIST** jusqu'à ce que l'afficheur indique *SPEAKER*, puis taper **1** (mode son 1 - HP intérieurs du téléviseur).
- Le dispositif de réglage du son du téléviseur («Bass, Treble, Balance») doit être réglé sur 0. La correction physiologique «Loudness» doit être hors circuit («off»). Taper : **MENU** **5** (ou **4**) **2** **1** et régler à l'aide des touches ▶▶, ◀◀, ▼ ou ▲
- Raccorder un voltmètre AF à la borne 3 de 10P57.
- Pour régler les aigus appliquer un signal de 10 kHz. Mettre en oeuvre la sortie de l'oscillateur BF et les touches de volume sonore ∧ et ∨ du Beo4 pour régler le niveau de l'entrée 10P57-3 et obtenir 250 mV.
- Pour régler les graves, appliquer un signal de 1 kHz. Mettre en oeuvre la sortie de l'oscillateur BF et les touches de volume sonore ∧ et ∨ du Beo4 pour régler le niveau de l'entrée 10P57-3 et obtenir 250 mV.
- Raccorder le voltmètre AF au niveau de la sortie de l'enceinte correspondante (il n'est pas obligatoire de raccorder les enceintes pour ce réglage).

Graves :	10P60-1	Sortie graves
	10P60-2	Non affecté
	10P60-3	Masse graves
Aigus :	10P60-4	Sortie aigus
	10P60-5	Masse aigus

- Régler la tension de sortie des HP pour qu'elle corresponde à la tension indiquée dans le tableau en regard de la valeur estampée sur la face arrière de l'enceinte.

Réglage des graves : 10R59 (coordonnées 1E)
Réglage des aigus : 10R58 (coordonnées 1D)

Rated value in dB	Bass	Treble
+2,00 dB	1,41 V	2,04 V
+1,75 dB	1,46 V	2,10 V
+1,50 dB	1,50 V	2,16 V
+1,25 dB	1,54 V	2,23 V
+1,00 dB	1,59 V	2,29 V
+0,75 dB	1,63 V	2,36 V
+0,50 dB	1,68 V	2,43 V
+0,25 dB	1,73 V	2,50 V
0,00 dB	1,78 V	2,57 V
- 0,25 dB	1,83 V	2,65 V
- 0,50 dB	1,88 V	2,72 V
- 0,75 dB	1,94 V	2,80 V
- 1,00 dB	2,00 V	2,88 V
- 1,25 dB	2,06 V	2,97 V
- 1,50 dB	2,12 V	3,05 V
- 1,75 dB	2,18 V	3,14 V
- 2,00 dB	2,24 V	3,24 V

Remplacement du module 10 «Output Amplifier»

En remplaçant le module 10 «Output Amplifier», régler les sorties (graves et aigus) sur leurs valeurs nominales (0,00 dB) en suivant la procédure de réglage du niveau sonore des HP de grave et d'aigu. Le module 10 «Output Amplifier» est identique pour les voies droite et gauche.

Module 12 IF

Ne régler qu'en cas de remplacement du module 12 IF ou de 12IC4 TDA9815 (coordonnées 2A).

Fiche d'essai 1P89 :

Borne 1	Masse
Borne 2	5 V
Borne 3	BF gauche (CH SEP)
Borne 4	V_{CAF}
Borne 5	BF droite
Borne 6	Point de commutation V_{CAG}

- Raccorder un signal d'antenne présentant une fréquence connue (XXX.25 MHz) et une modulation stéréo A2.
- Sélectionner «arrêt CAF» (AFC off) dans le menu de configuration de maintenance. Taper : TV MENU 5 (ou 4) 0 0 GO 2 ▸▸ ▼ GO.
- Sélectionner le menu dédié à la sélection des canaux TV : STOP 1 1 ou TV MENU 5 (ou 4) 1 1.
- Régler le sélecteur de canaux sur la fréquence connue en tapant : X X X (chiffres) ▸▸, puis sélectionner un numéro de programme X X GO.

AFC (CAF)

- Raccorder un voltmètre cc à la borne 4 de 1P89 (V_{CAF}).
- Régler 12L5 (coordonnées 2B) avec une clé non magnétique pour obtenir une tension de 1,95 V ± 0,1 V à la borne 1P89-4 (V_{CAF}).

AGC Takeover (point de commutation CAG)

- Régler le signal d'antenne sur 2 mV.
- Raccorder un voltmètre cc à la borne 6 de 1P89 (point de commutation V_{CAG}).
- Régler 12R112 (coordonnées 2B) pour obtenir une tension de 7,3 V ± 0,1 V à la borne 1P89-6 (point de commutation V_{CAG}).

Séparation des voies

- Raccorder un oscilloscope à la borne 3 de 1P89.
- Régler 12R113 (coordonnées 2B) pour obtenir une diaphonie minimale.

CONSEILS DE REPARATION
Mode de maintenance

Le mode de maintenance (Service mode) se subdivise en un menu de maintenance et en un mode ignorant les erreurs sur le bus ("Bus ignore mode").

Menu de maintenance (Service menu)

Le menu de maintenance permet, entre autres, de régler l'image et la géométrie, se reporter au paragraphe "REGLAGES DE MAINTENANCE AVEC LE Beo4". La description suivante met en oeuvre une télécommande Beo4.

- Accès au menu de maintenance : Taper TV MENU, sélectionner l'option "Setup" avec lla touche ▼ et entrer GO 0 0 GO. Dans les menus, il est possible de revenir en arrière en appuyant sur STOP. Pour quitter le mode de maintenance, appuyer sur ●.

Service menu

1 Monitor
2 TV tuner
3 V.Tape

Le menu de maintenance permet de sélectionner la source à régler, à reconfigurer ou à consulter pour obtenir de plus amples informations.

Sélectionner "Moniteur" (monitor) en tapant 1

Monitor service menu

1 Monitor information
2 Service counters
3 Picture adjustments
4 Geometry adjustments
5 Text Registers

Le menu de maintenance dédié au moniteur (Monitor service menu) permet de consulter les informations suivantes :
(Le réglage de l'image et de la géométrie est décrit dans le paragraphe consacré au réglage).

Menu "information moniteur", taper 1

Monitor information

06 IC1 :	(AP) SW	1.0
14 IC13:	(FEP) SW	1.0
Type		1811101
Serial no.		12345678
Last TV error		NO
Last ML/SL error		NO

- Software version nr. (version du logiciel)
- Type and serie nr. (modèle et n° de série)
- Last TV error (dernière erreur TV)
- Last error ML/SL (dernière erreur ML/SL)

Derrière erreur

Le téléviseur est à même de détecter certains types d'erreur et de les afficher sur le menu de l'écran.

Le premier code d'erreur porte sur la détection des erreurs affectant le téléviseur.
Les erreurs suivantes peuvent être signalées :
"Last TV error" NO = aucune erreur enregistrée
"Last TV error" xx - 1 = erreur sur le bus 1 I^2C
"Last TV error" xx - 2 = erreur sur le bus 2 I^2C
"Last TV error" DF = absence de donnée (défaut éventuel de la mémoire EEPROM du circuit 6IC4).
"Last TV error" PF = panne secteur (le circuit 2IC7 de TDA9162 ne peut pas initier le mode TV).

Le second code d'erreur porte sur la détection d'erreur dans le système Master Link.
Les erreurs suivantes peuvent être signalées :
"Last ML/SL error" NO = aucune erreur enregistrée
"Last ML/SL error" CI = configuration de l'adresse impossible
"Last ML/SL error" TD = données ML au niveau bas
"Last ML/SL error" TU = données ML au niveau haut
"Last ML/SL error" -- = autres erreurs possibles indéfinissables

Il convient d'effacer le code d'erreur après avoir réparé l'anomalie signalée sur l'afficheur. Pour ce faire, appuyer sur GO dans le menu "information moniteur".

Erreur sur le bus I^2C

Ce type d'erreur traduit une absence d'échange de données sur le bus quand le micro-calculateur essaie de dialoguer avec une adresse définie. Dans la majorité des cas, cette erreur signifie que le CI adressé est défectueux. Mais l'anomalie peut également être imputable à un composant périphérique du CI ou à d'autres composants du bus.
Adresses intervenant lors d'une erreur sur le bus I^2C :
Dernière erreur sur le bus 1

D0 - 1	14IC40, horloge MK41T56
88 - 1	2IC4, processeur vidéo TDA4680
8A - 1	2IC7, décodeur couleur & processeur synchro TDA9162
4A - 1	41IC2, expanseur E/S I^2C PCF8574
2E - 1	40IC5, processeur incrustation d'image dans l'image SDA9188

Dernière erreur sur le bus 2

C0 - 2	1TU1, sélecteur de canaux TV
84 - 2	1IC3, décodeur stéréo A2 TDA8417
B6 - 2	31IC7, décodeur stéréo NICAM CF70088
C6 - 2	20TU1, sélecteur de canaux satellite (SXT2001CDI)
C4 - 2	20TU1, sélecteur de canaux satellite (SXT2041CD)
22 - 2	2IC6, décodeur télétexte SDA5273
80 - 2	14IC10, commandes son TDA7314S
90 - 2	14IC3, commutateur vidéo TEA6425
94 - 2	14IC4, commutateur vidéo TEA6425
96 - 2	14IC2, commutateur vidéo TEA6425
88 - 2	30IC7, processeur son TDA7318
4C - 2	30IC4, expanseur E/S I^2C PCF8574
4E - 2	30IC3, expanseur E/S I^2C PCF8574

Absence de données (Data failure)

Le micro-calculateur remplace les données manquantes par la valeur par défaut mémorisée dans la PROM (6IC1) si une anomalie affecte l'EEPROM (6IC4) et empêche de lire les données de géométrie et d'image appliquées au téléviseur.

Panne secteur (Power fail)

Le téléviseur se ferme si, après 20 tentatives, 2IC7 (TDA9162) n'arrive pas à démarrer en mode vidéo. Ce phénomène peut se produire en cas d'anomalie dans les circuits de déviation.

Dernière erreur (Last error) ML/SL CI	Défaut dans la configuration de l'adresse. Aucune adresse n'est attribuée car la liaison met en oeuvre un nombre excessif d'unités. - Isoler l'ensemble des unités raccordées à la liaison et les rebrancher l'une après l'autre. Ne pas oublier que cette mesure concerne également le câble en nappe hexapolaire reliant le téléviseur et le magnétoscope.
Dernière erreur (Last error) ML/SL TD	La liaison présente un niveau bas. Cette erreur peut également traduire un court-circuit physique dans la liaison, dans ses pilotes ou dans le circuit ML maître/source du téléviseur. - Vérifier que la borne 15 (ML M/S) de 14IC13 délivre des impulsions. La fréquence doit avoisiner 1,5 ms (le téléviseur est maître). - Isoler l'une après l'autre les unités raccordées à la liaison tout en vérifiant que la liaison autorise un échange de données. Ne pas oublier que cette mesure concerne également le câble en nappe hexapolaire reliant le téléviseur et le magnétoscope.
Dernière erreur (Last error) ML/SL TU	La liaison présente un niveau haut. L'anomalie est imputable au niveau trop bas de la résistance de travail du système ou à une erreur dans les pilotes de la liaison. - Débrancher la liaison externe du téléviseur. Ne pas oublier de débrancher également le câble en nappe hexapolaire reliant le téléviseur et le magnétoscope. Mettre le téléviseur sous tension et vérifier qu'il émet dans les 3 à 4 secondes qui suivent un télégramme de 15 ms env. au niveau de la borne 13 de 14IC13 (ML TRANSMIT). Il devrait être possible de mesurer un signal identique temporisé de 10 à 15 µs à la borne 14 de 14IC13 (ML RECEIVE).

Sélectionner l'option "registres télétexte" (Text registers) du menu de maintenance dédié au moniteur en tapant **5**.

```
Test Register setup

R01  R02  R03  R04  R05  R06  R07  R08
 5    11   0    0    0    0    0    0
R09  R10
 0    0
```

Dans certaines installations câblées, une erreur affectant le temps de propagation de groupe est susceptible d'altérer la réception du télétexte. Il est possible d'éviter ce problème en insérant, en série avec le signal vidéo composite appliqué au décodeur télétexte, un filtre.
Les chiffres figurant sous les registres R01 à R10 correspondent à des numéros de programme. La présence d'un 0 en regard de chaque registre indique qu'aucun des numéros de programme n'a de filtre. Pour insérer un filtre dans un programme, sélectionner un registre en tapant ◀◀ / ▶▶, puis entrer le numéro de programme souhaité. Terminer en appuyant sur GO.
Dans notre exemple, un filtre est inséré dans les programmes 5 et 11. Le filtre n'est opérationnel qu'après avoir commuté une nouvelle fois sur le programme concerné.

Sélectionner l'option "compteurs de maintenance" (Service counters) du menu de maintenance dédié au moniteur en tapant 2.

```
Monitor service counters

Stand-by (days)        0000
Audio mode (days)      0000
Video mode (days)      0000
On/Off (times ★10)     0000
```

La ligne "On/Off (times ★ 10)" indique le nombre de fois que le téléviseur a été commuté en mode veille. Ce nombre est affiché en dizaines d'unités. Seules les 4 unités de plus faible poids sont reprises si le nombre comprend plus de 4 chiffres (exemple : 12834 est affiché sous la forme 2834).
Les autres indications de temps du menu sont exprimées en jours complets.

Sélectionner l'option "sélecteur de canaux TV" (TV-tuner) du menu de maintenance en tapant 2.

```
TV service setup

Tuner system                AFC
1                           On

Low tuning range            High tuning range
45                          860

Lower band limit            Upper band limit
170                         450

Vhf-1 const      Vhf-2 const      Uhf const
162              148              49
```

Dans le menu de configuration de maintenance TV (TV service setup menu), seules sont mises en oeuvre les options "norme sélecteur de canaux" (Tuner system) et "CAF" (AFC). Les autres indications s'adressent à l'usine. Il est interdit de les modifier.
Norme du sélecteur de canaux :
Le nombre inscrit dans cette zone indique la norme TV couleur retenue dans la définition de la FI correspondante.
Il convient de régler ce nombre si la carte "Tuner & MF" est changée pour capter une autre norme TV couleur.
Les valeurs affectées aux différentes normes sont les suivantes :
B/G = 1
L/L' = 2
M = 4
D/K = 8
I = 16
La valeur applicable à un ensemble de normes s'obtient en additionnant les différents nombres en question.
Les valeurs des variantes FI du BeoVision Avant sont les suivantes :
B/G = 1
B/G/L/L' = 3
I = 16
B/G/L/L'/I = 19
B/G/M/D/K/I = 29
Taper GO pour mémoriser la valeur.

La fonction "marche/arrêt CAF" (AFC On/Off) s'utilise lors du réglage. Mais elle peut également s'avérer utile dans d'autres contextes.
Appuyer sur ◀◀ / ▶▶ pour déplacer le curseur.
Appuyer sur ▲ / ▼ pour commuter entre "marche" (On) et "arrêt" (Off).
Il est impossible de mémoriser l'option "arrêt CAF". Le CAF est toujours en service quand le mode veille est adopté.

Sélectionner l'option "magnétoscope" (V.Tape) du menu de maintenance en tapant 3. Sélectionner l'option "information" dans le menu de maintenance dédié au magnétoscope en tapant 1.
Ce menu d'information permet, entre autres, de connaître les versions du logiciel du magnétoscope.

Le mode de maintenance dédié au magnétoscope est décrit dans la notice de maintenance du magnétoscope BeoVision Avant.

Mode ignorant les erreurs sur le bus (Bus Ignore Mode)

Il est possible de mettre le téléviseur en service et d'ignorer l'erreur éventuelle qui affecte le bus I^2C et qui contraint le téléviseur à commuter en mode veille chaque fois qu'une tentative de mise en marche est entreprise.
- Le téléviseur doit être en mode veille.
- Court-circuiter la fiche bipolaire P84 (ignore) coordonnées 7M de la carte "AV switch PCB14".
- Le téléviseur se met alors en marche en ignorant - si possible - l'erreur du bus. Si la mise en marche se révèle impossible, le phénomène est vraisemblablement imputable à une anomalie affectant 6IC3, 14IC13, 26IC3 (en présence d'un positionneur) ou l'un des composants périphériques de ces CI.

Options

La programmation du téléviseur peut retenir trois options.

Option 0 = Coupure du récepteur IR du téléviseur.

Option 1= Installation des systèmes audio et vidéo dans la même pièce.

Option 2 = Installation des systèmes audio et vidéo dans des pièces différentes.

Exemple de programmation à l'aide du Beo4 :
- Le téléviseur doit être en mode veille.
- Taper ●, maintenir la touche enfoncée et appuyer sur LIST. Taper GO, puis LIST jusqu'à ce que l'afficheur du Beo4 indique V.OPT. Entrer alors le numéro de l'option souhaitée.

Le téléviseur est programmé d'usine sur l'option 1.

Cartes "Sound Output PCB10" et "ABL PCB11"

Lors des interventions de maintenance sur les cartes "Sound Output PCB10" et "ABL PCB11", il peut s'avérer opportun de déposer la plaque de refroidissement qui masque une partie des composants. Le CI de sortie STK peut aisément fonctionner quelques instants sans plaque de refroidissement si la modulation est faible.

Alimentation à découpage (SMPS) de la carte PCB4

Les conseils de réparation suivants peuvent s'avérer utiles en cas d'anomalie dans le bloc d'alimentation principale à découpage de la carte PCB4.

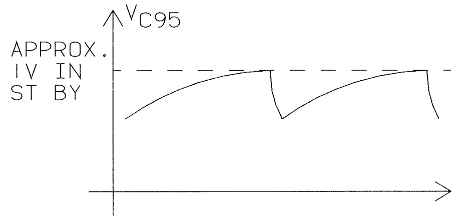
Il est conseillé de remplacer également TR84, TR85 et TR86 si TR41 est défectueux (se contrôle très rapidement avec un ohmmètre).
Si TR41 est en bon état, vérifier les points suivants :

1. La tension traversant C4 doit dépasser 250 V env. Dans la négative, il se peut que le fusible ou D1 soit défectueux.

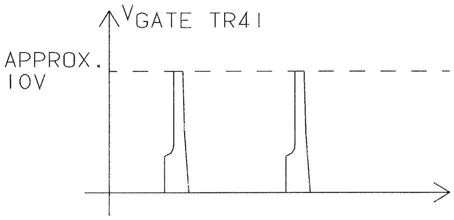
2. La tension d'alimentation appliquée à C83 doit avoisiner 6 V lors de la mise en marche. Le bloc d'alimentation ne démarre pas si elle est inférieure. Ce phénomène peut être imputable à un composant défectueux qui prélève trop de courant sur la ligne d'alimentation.

3. Le bloc d'alimentation ne peut démarrer si TR61 est court-circuité. La tension traversant C83 avoisine 6 V.

4. Le circuit de protection TR91 et d'autres cellules sont actionnés si C95 n'est pas traversé par une tension continue mais par une tension présentant l'allure ci-dessous. Ce phénomène peut s'expliquer par une surcharge du bloc d'alimentation ou par le court-circuit d'un condensateur électrolytique, voire d'une diode montée sur l'une des lignes d'alimentation. La même anomalie apparaît si L91 est découplé.



5. Isoler le drain de TR41 (soulever J5). Raccorder une tension continue externe de 15 à 20 V pour alimenter C83 et relier le téléviseur à la tension secteur. L'oscillateur doit alors fonctionner à 20 kHz. Une tension continue avoisinant 1,3 V doit traverser C95. La tension ne doit pas présenter l'allure de la fig. ci-dessus.
   La tension au collecteur de TR83 doit être rectangulaire. Cette allure est amplifiée dans TR84, puis appliquée à la gâchette de TR41.



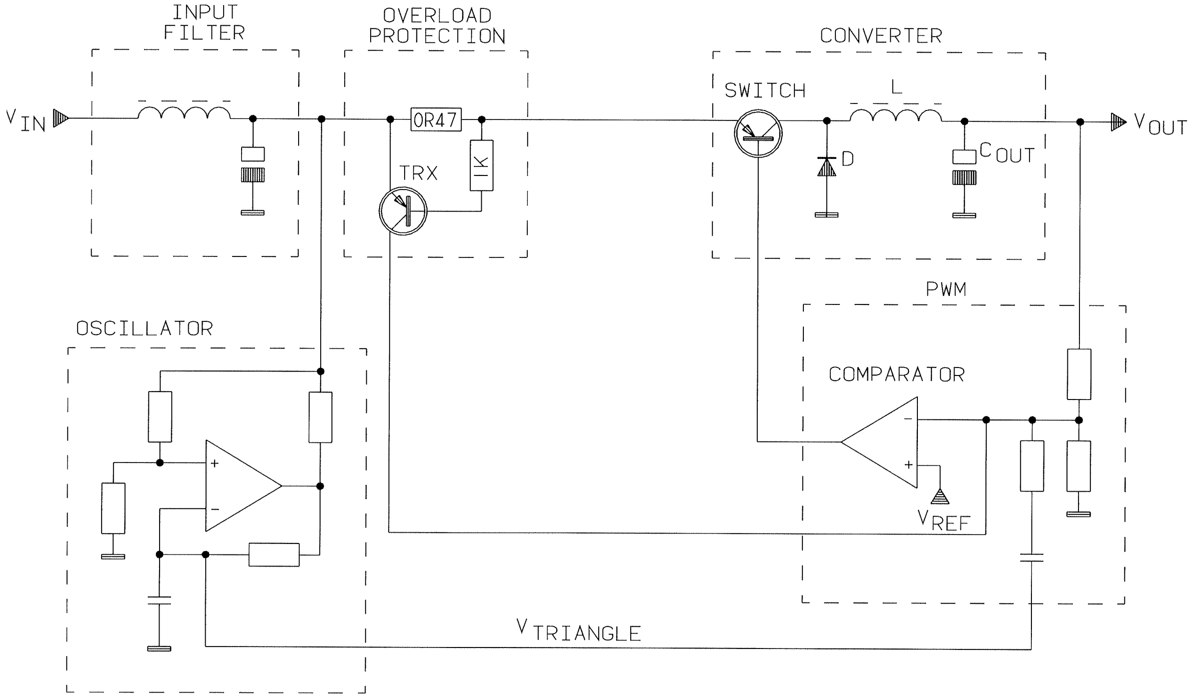
6. Vérifier que la borne 2 de P42 commute au niveau haut si le téléviseur en veille ne peut pas se mettre en marche en mode audio.

Alimentation à découpage 50 kHz

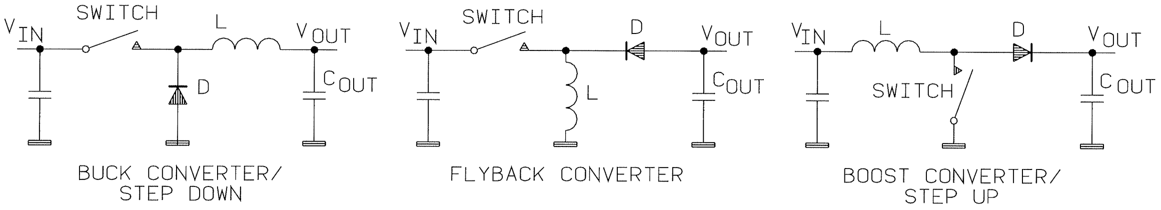
Le BeoVision Avant présente trois petits blocs d'alimentation à découpage. Ils sont logés sur les cartes "AV Switch PCB14", "Satellit PCB20" et "Dolby Surround PCB30".

Ces trois alimentations à découpage reposent sur des principes différents mais présentent toutes les composants suivants :

- Oscillateur
- Circuit de réaction/modulateur de largeur d'impulsion (PWM)
- Filtre d'entrée
- Circuit de protection
- Convertisseur (contacteur)


INPUT FILTER
OVERLOAD PROTECTION
CONVERTER
V_{IN}
0R47
TRX
1K
SWITCH
L
D
C_{OUT}
V_{OUT}
PWM
OSCILLATOR
COMPARATOR
V_{REF}
$V_{TRIANGLE}$

Ces trois principes sont schématisés ci-dessous :

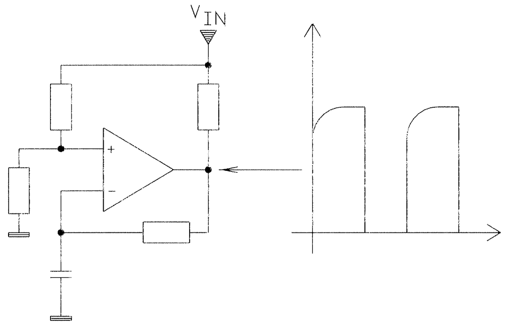

V_{IN}
SWITCH
L
D
V_{OUT}
C_{OUT}
BUCK CONVERTER/ STEP DOWN
FLYBACK CONVERTER
BOOST CONVERTER/ STEP UP

Origines vraisemblables des anomalies affectant le convertisseur	- Contacteur défectueux → absence de Vout ou Vout = Vin. - Diode défectueuse → absence de Vout ou Vout = Vin.

Conseils généraux pour rechercher les pannes

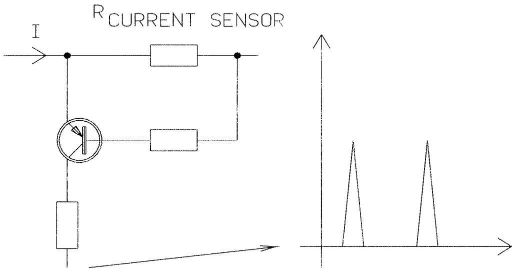
1. Contrôler la tension au niveau du collecteur du transistor de commutation. Elle doit être rectangulaire avec éventuellement quelques rebondissements. Les impulsions présentent une fréquence de 50 kHz env. L'alimentation à découpage ne fonctionne pas s'il s'agit d'une tension continue. Une anomalie peut affecter l'oscillateur, le transistor de commutation ou la diode du convertisseur.

2. Vérifier que l'oscillateur fonctionne à une fréquence de 50 kHz env. Dans la négative, l'oscillateur peut présenter une anomalie ou le circuit de protection être en service. L'oscillateur de toutes les petites alimentations à découpage adopte la même configuration et met en oeuvre un comparateur.



OSCILLATOR

3. Voir si le circuit de protection est en service. Dans l'affirmative, le phénomène peut s'expliquer par une surcharge ou par un composant défectueux dans l'alimentation à découpage. Couper la charge pour localiser l'erreur. Le circuit de protection délivre une impulsion quand le courant traversant le transistor de commutation est trop important. Dans ce cas, le transistor bloque et ne réadopte l'état passant qu'au bout de 20 µs env.



OVERLOAD PROTECTION ACTIVE

DISMANTLING

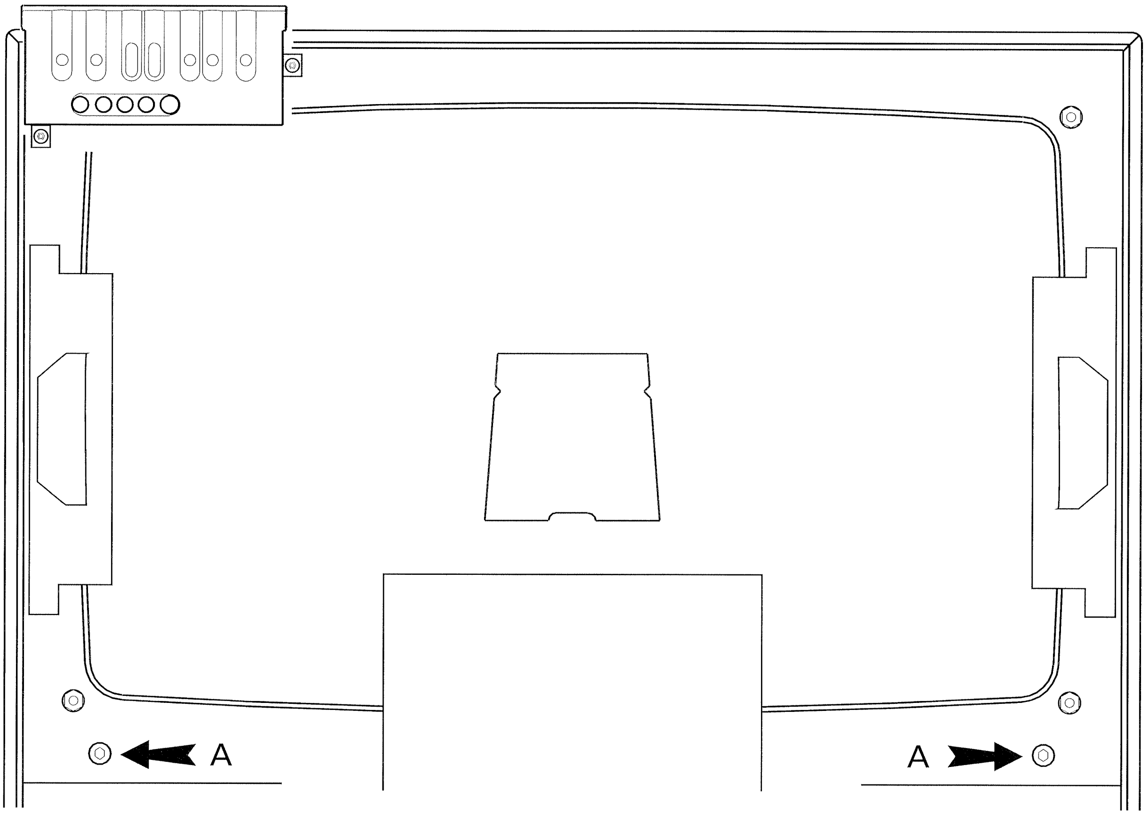
Contrast screen and front frame
Remove the upper rear panel (6 screws).

ZERLEGUNG

Kontrastscheibe & Frontrahmen
Das obere Rückwandteil (6 Schrauben) abmontieren.

DESASSEMBLAGE

Ecran de contraste et panneau frontal
Déposer la partie supérieure de la face arrière (6 vis).



Unscrew the screws A, and pull them backwards and out. A 4 mm box spanner is required. Remove the front frame. Lift up the front frame and pull it off.
Remove four screw, thereby removing the contrast screen.
When the front frame is installed, it must be "clicked" into place to be installed correctly.

Die Schrauben A lösen und nach hinten ziehen. Zum Lösen der Schrauben ist ein 4 mm Steckschlüssel zu benutzen. Der Frontrahmen muß abmontiert werden. Den Frontrahmen anheben und abziehen. 4 Schrauben und damit auch die Kontrastscheibe abmontieren. Bei der Montage des Frontrahmens muß dieser einschnappen, um korrekt zu sitzen (auf Klickgeräusch achten).

Desserrer les vis A et tirer en arrière. Utiliser une clé à douille de 4 mm. Il convient de déposer le panneau frontal. Pour ce faire, soulever et tirer. Dévisser 4 vis pour pouvoir déposer l'écran de contraste. L'écran de contraste est bien remonté quand il s'enclenche en émettant un clic audible.

Speaker front fabric
Pull the fabric frame outwards on the right-hand side, and push it towards the right.

Installation:
Fit the fabric frame guide pins into the pilot holes.
Press the fabric frame against the product at the centre, and push the fabric frame towards the left.

Lautsprecherfrontstoff
Den Stoffrahmen auf der rechten Seite nach außen ziehen und anschließend nach rechts verschieben.

Montage:
Die Führungszapfen des Stoffrahmens in die Führungslöcher einsetzen. Den Stoffrahmen in der Mitte gegen das Gerät drücken und den Stoffrahmen nach links verschieben.

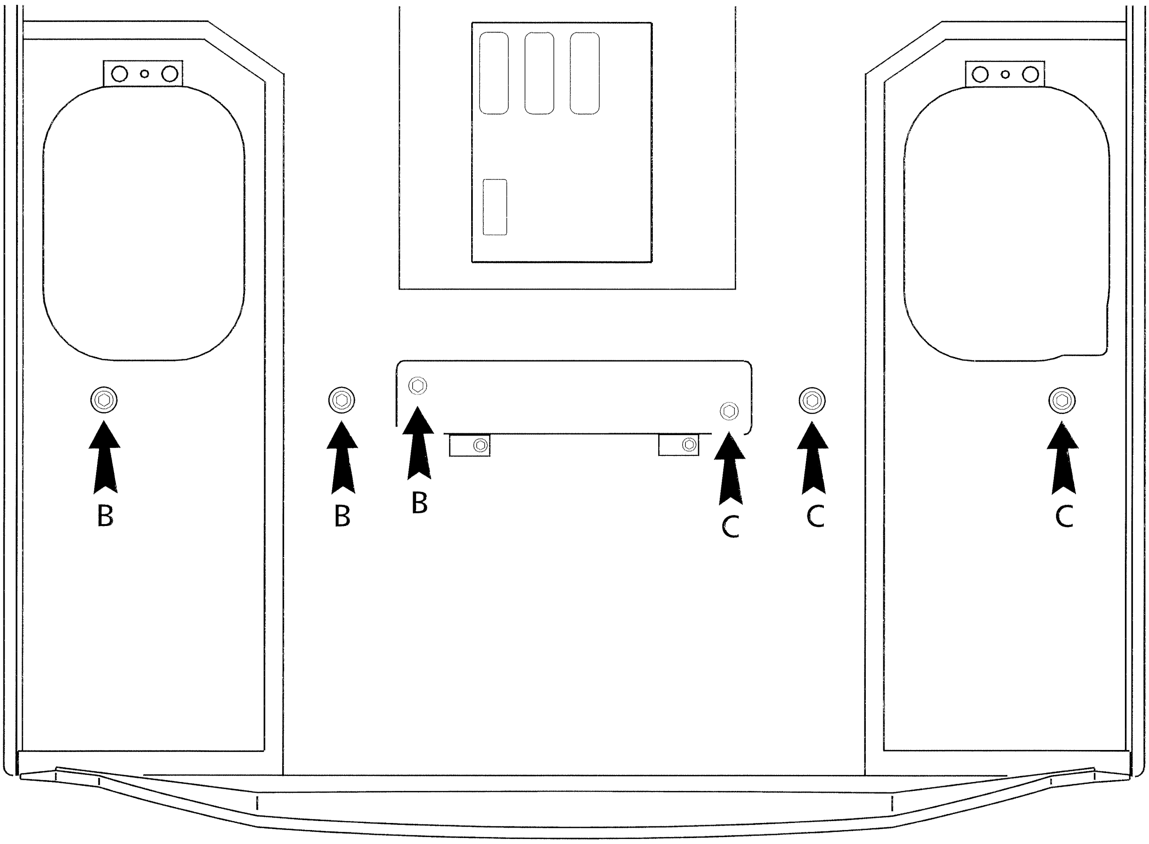
Panneau frontal en textile du haut-parleur
Tirer sur le côté droit du panneau en textile et le repousser vers la droite.

Montage :
Engager les tenons du panneau en textile dans les orifices de guidage. Appuyer le panneau en textile (au milieu) contre l'appareil et repousser le panneau vers la gauche.

Left- and right-hand front mouldings
The VTR unit and the speaker cabinets have to be removed. See the applicable instructions below.

Linke und rechte Frontzierleiste
Die VTR-Einheit und die Lautsprechergehäuse müssen abmontiert werden. Siehe hierzu die entsprechenden Punkte.

Bandeaux décoratifs droit et gauche de la face avant
Il convient de déposer le magnétoscope et les enceintes des haut-parleurs. Se reporter aux points traitant de ces opérations.



Unscrew the screws B to remove the right-hand moulding and the screws C to remove the left-hand moulding.

Zum Abnehmen der rechten Zierleiste sind die Schrauben B und zum Abnehmen der linken Zierleiste die Schrauben C herauszuschrauben.

Enlever les vis B pour déposer le bandeau décoratif droit, les vis C pour le bandeau gauche.

Cassette flap

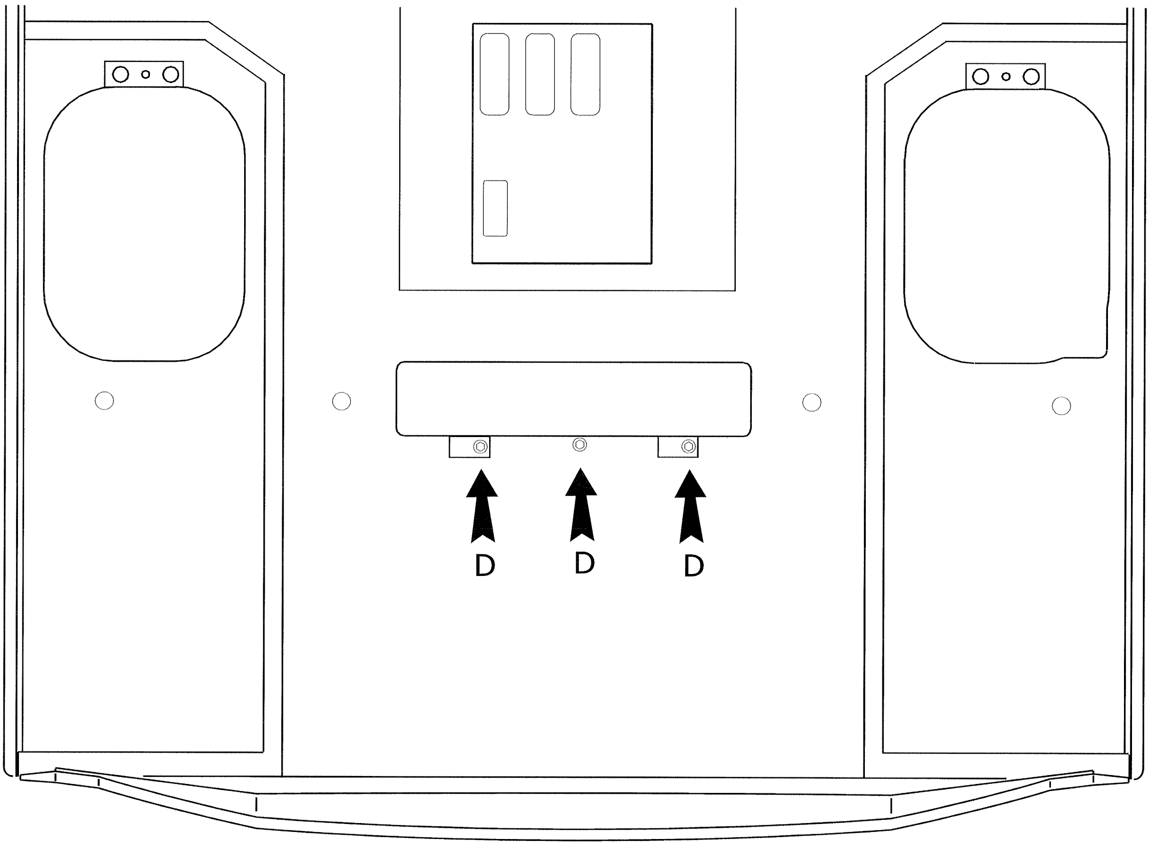
The left- and right-hand mouldings have to be removed. See the applicable instructions above.

Cassettenschachtklappe

Die linke und rechte Frontzierleiste müssen abmontiert werden. Siehe hierzu den entsprechenden Punkt.

Volet du compartiment de la cassette

Il convient de déposer les bandeaux décoratifs droit et gauche de la face avant. Se reporter au point traitant de cette opération.



Unscrew the screws D to remove the cassette flap.

Zum Abmontieren der Cassettenschachtklappe sind die Schrauben D herauszuschrauben.

Dévisser les vis D pour déposer le volet du compartiment de la cassette.

VTR unit
(Gives access to e.g. the motorized stand electronics which are located in a housing on top of the motorized stand.)
Remove the lower rear panel (4 screws).
Remove the 4 screws (2 on each side) which hold the metal box containing the VTR unit.
The metal box containing the VTR unit can now be pulled backwards and out when the leads have been disconnected.
The mains lead and the 2-pole lead have to be disconnected from PCB60 which is located in the black plastic box containing the mains switch.

Installation:
Push home the metal box containing the VTR unit in the main frame, and then pull it approx. 3 mm backwards.
Tilt up the cassette flap, and carefully push the metal box containing the VTR unit into place, i.e. so that the pin on the left-hand side of the cassette lift goes into mesh with the cassette flap.

Speaker cabinets
Remove the upper rear panel (6 screws).
Remove the lower rear panel (4 screws).
Remove the speaker front fabric. See the applicable instructions above.
Remove the screw at the top of the speaker cabinet, as viewed from the front.
The speaker cabinet can now be pulled backwards.
When installing the speaker cabinet, the two rubber dampers must be fitted on the towers at the bottom of the speaker cabinet, and they must be fitted into the holes in the bottom of the main frame.

VTR-Einheit
(Bietet u.a. Zugang zur Drehfußelektronik, die in einem Gehäuse oben auf dem Drehfuß angeordnet ist). Das untere Rückwandteil (4 Schrauben) abmontieren. Die 4 Schrauben (2 auf jeder Seite), die den Metallkasten mit der VTR-Einheit festhalten, abmontieren. Der Metallkasten mit der VTR-Einheit kann jetzt nach Demontage der zugehörigen Leistungen nach hinten herausgezogen werden. Die Netzleitung und die 2polige Leitung sind auf der Platine PCB60, die sich in der schwarzen Kunststoffbox mit dem Netzschalter befindet, abzumontieren.

Montage:
Den Metallkasten mit der VTR-Einheit in den Hauptrahmen ganz hineinschieben und ihn danach um ca. 3 mm nach hinten ziehen. Die Cassettenschachtklappe nach oben kippen und den Metallkasten mit der VTR-Einheit vorsichtig nach vorne schieben, so daß der Zapfen auf der linken Seite des Cassettenlifts mit der Cassettenschachtklappe einrastet.

Lautsprechergehäuse
Das obere Rückwandteil (6 Schrauben) abmontieren.
Das untere Rückwandteil (4 Schrauben) abmontieren.
Den Lautsprecherfrontstoff abmontieren. Siehe hierzu den entsprechenden Punkt.
Die Schraube ganz oben am Lautsprechergehäuse (von vorne gesehen) abmontieren.
Das Lautsprechergehäuse kann jetzt nach hinten gezogen werden.
Bei der Montage des Lautsprechergehäuses müssen die 2 Gummipuffer auf die Türme am Boden des Lautsprechergehäuses gesetzt sein, und diese sind in die Löcher im Boden des Hauptrahmens zu setzen.

Magnétoscope
(Permet, entre autres, d'accéder à l'électronique du pied rotatif qui est logée dans un boîtier surmontant le pied proprement dit).
Déposer la partie inférieure de la face arrière (4 vis).
Enlever les 4 vis (2 de chaque côté) maintenant le coffret métallique et le magnétoscope. Il est alors possible de déposer le coffret métallique et le magnétoscope en tirant sur l'ensemble après avoir déconnecté les câbles correspondants.
Débrancher le cordon d'alimentation et le câble à deux conducteurs de la carte PCB60 logée dans le coffret plastique noir présentant l'interrupteur secteur.

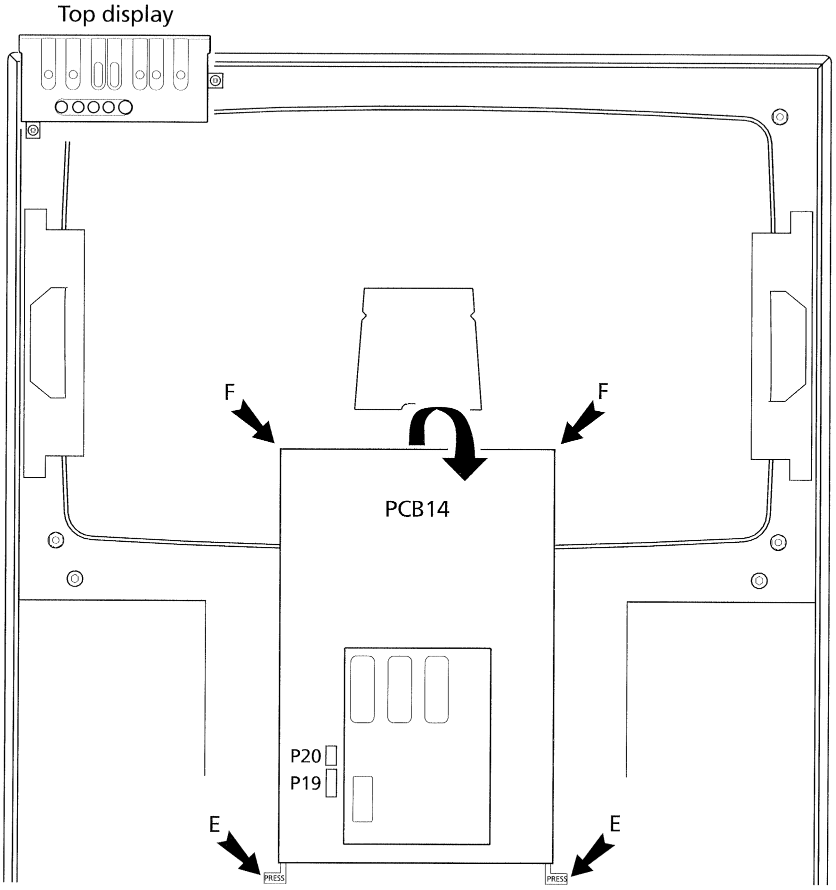
Montage :
Repousser le coffret métallique et le magnétoscope au fond du cadre principal, puis tirer légèrement (3 mm env.) l'ensemble vers soi.
Soulever le volet du compartiment de la cassette, puis positionner avec précaution le coffret métallique et le magnétoscope en les repoussant pour que le tenon gauche du dispositif de levage de la cassette soit en prise avec le volet.

Enceintes des haut-parleurs
Déposer la partie supérieure de la face arrière (6 vis).
Déposer la partie inférieure de la face arrière (4 vis).
Enlever le panneau frontal en textile du haut-parleur. Se reporter au point traitant de cette opération.
Enlever la vis située en haut de l'enceinte vue de devant.
Il est alors possible de déposer l'enceinte en la tirant.
Lors du remontage de l'enceinte, poser les 2 amortisseurs en caoutchouc sur les protubérances que présente la partie inférieure de l'enceinte et veiller à ce qu'ils se logent dans les orifices pratiqués dans le fond du cadre principal.

Service position of power chassis
Remove the upper rear panel (6 screws).
Unscrew the top display (2 screws). To be able to operate the product with the chassis in service position, the top display must be connected to the chassis.
Unplug the aerial plug from the tuner.
Unplug the plugs at P19 and P20 on PCB14. (P19 is connected to the VTR unit and P20 to the motorized stand.)
Take the lead connections to the chassis out of their cable holders.
NOTE: when the product is assembled the leads must be reinstalled correctly in their cable holders.

Service-Position des elektrischen Chassis
Das obere Rückwandteil (6 Schrauben) abmontieren.
Das Top-Display (2 Schrauben) abschrauben. Um das Gerät mit dem elektrischen Chassis in Service-Position bedienen zu können, muß das Top-Display unbedingt Verbindung zum Chassis haben.
Den Antennenstecker aus dem Tuner herausnehmen.
Die Steckverbindungen in P19 und P20 auf der Platine PCB14 abmontieren. (P19 hat Verbindung zur VTR-Einheit und P20 zum Drehfuß).
Die Leitungsverbindungen für das Chassis aus ihren Leitungshaltern lösen. Achtung! Wenn das Gerät zusammengebaut wird, sind die Leitungen wieder in die Leitungshalter korrekt anzubringen.

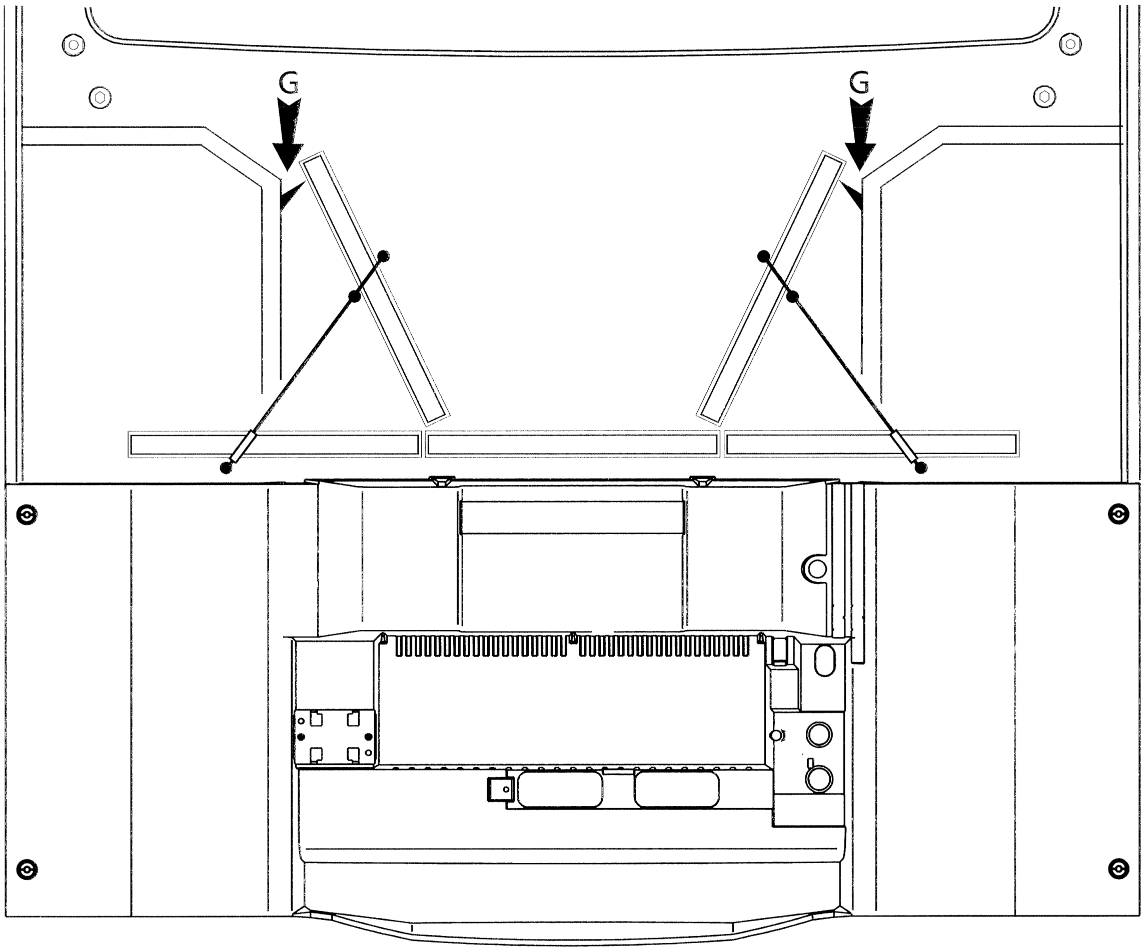
Position de maintenance du châssis électrique
Déposer la partie supérieure de la face arrière (6 vis).
Dévisser l'afficheur supérieur (2 vis). Il est impératif que l'afficheur supérieur soit relié au châssis pour pouvoir commander l'appareil quand le châssis est en position de maintenance.
Débrancher la fiche d'antenne du sélecteur de canaux.
Débrancher les fiches raccordées à P19 et P20 sur la carte PCB14 (P19 est reliée au magnétoscope et P20 au pied rotatif).
Sortir des serre-câbles les fils raccordés au châssis. Attention ! Lors du rassemblage, il convient de remettre correctement les fils dans les serre-câbles.



Press down the locking pins E, and pull out the chassis to the first stop. Grab the chassis frame at the points F at the top, and pull the chassis backwards.
The two PCB frames on either side of the chassis can now be tilted out and away from each other.

Die Verriegelungslaschen E nach unten drücken und das Chassis bis zum ersten Anschlag herausziehen. Den Chassisrahmen oben an den Punkten F anfassen und das Chassis nach hinten ziehen.
Die 2 Platinenrahmen auf beiden Seiten des Chassis können jetzt heraus- und auseinandergekippt werden.

Appuyer sur les ergots de verrouillage E et sortir le châssis en le tirant jusqu'au premier cran. Prendre le haut du cadre du châssis par les points F et tirer le châssis en arrière.
Il est alors possible de pivoter et de désolidariser les deux cadres accueillant les cartes de chaque côté du châssis.



Hang the innermost PCB frame on either side on the hooks G in the aluminium brackets.
When assembling the product, make sure to fasten all leads in the cable holders. This will prevent the occurrence of clinking and clanking sounds at high volumes.
The EHT and focus cables must be run below the picture tube throat and tied to the cable holders on the degaussing coil. Make sure that they do not come close to the right output amplifier since that could damage the output IC.

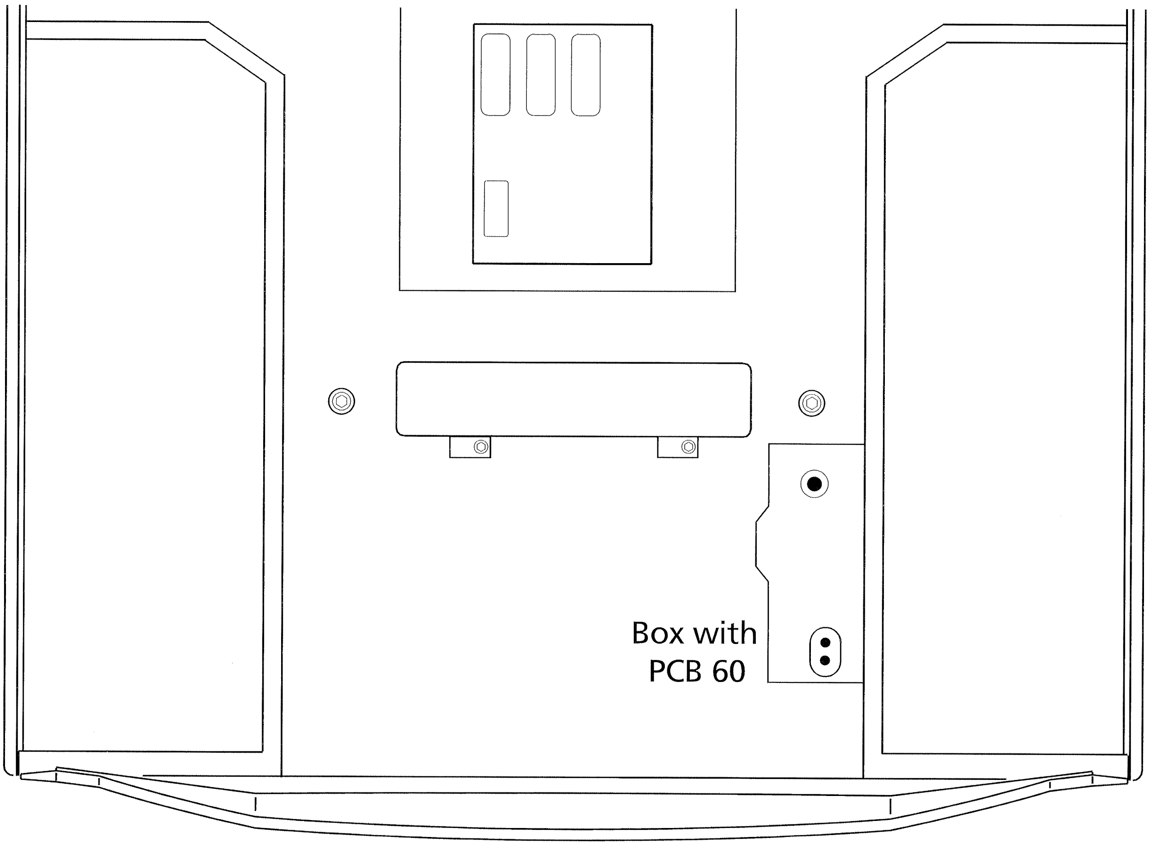
Der innere Platinenrahmen - auf jeder Seite des Chassis - wird auf die Haken G der Aluminiumwinkel gehängt.
Beim Zusammenbau des Gerätes ist es wichtig, daß alle Leitungen in den Leitungshaltern angebracht werden. Dadurch werden Klirr- und Klappergeräusche bei hoher Lautstärke vermieden.
Die EHT- und Fokussierkabel sind unter dem Bildröhrenhals zu verlegen und an den Leitungshaltern an der Entmagnetisierungsspule (Degauß-Spule) zu befestigen. Die dürfen nicht zu nahe am rechten Ausgangsverstärker liegen, da der Ausgangs-IC dadurch beschädigt werden kann.

De chaque côté du châssis, accrocher dans les cornières en aluminium G le cadre intérieur accueillant une carte.
En rassemblant l'appareil, veiller à regrouper tous les fils dans les serre-câbles. Cette mesure vise à éviter tout cliquetis ou bruit quand l'intensité sonore est élevée.
Amener les fils de concentration et de THT sous le col du tube cathodique et les coincer dans les serre-câbles de la bobine de démagnétisation. Ces fils ne doivent pas se trouver à proximité de l'amplificateur de sortie droit sous peine d'endommager le CI de sortie.

Mains Distribution, PCB60 (with mains fuse)
Remove the VTR unit. See the applicable instructions above.

'Mains Distribution'-PCB60 (mit Netzsicherung)
Die VTR-Einheit ausbauen. Siehe hierzu den entsprechenden Punkt.

Carte PCB60 "Mains Distribution" (dotée d'un coupe-circuit secteur)
Déposer le magnétoscope. Se reporter au point traitant de cette opération.



The cover of the black plastic box holding PCB60 can now be unclipped.

Der Deckel der schwarzen Kunststoffbox, wo die Platine PCB60 angeordnet ist, kann jetzt abgenommen werden.

Il est alors possible de sortir de ses clips le couvercle obturant le petit boîtier noir.

Motorized stand
Carefully place the BeoVision Avant on its side.
Remove the 4 pieces of tape covering the holes in the bottom of the motorized stand.
Turn the motorized stand until the 4 holes in the bottom are aligned with the screws.
Unscrew the 4 screws to remove the motorized stand.
The aluminium sheet on the motorized stand is fixed with double-sided adhesive tape.

Drehfuß
BeoVision Avant vorsichtig auf die Seite legen.
Die 4 Klebebandabdeckungen der Löcher im Boden des Drehfußes entfernen.
Dann so lange am Drehfuß drehen, bis die Schrauben durch die 4 Löcher im Boden des Drehfußes zugänglich sind.
Zur Demontage des Drehfußes die 4 Schrauben herausschrauben.
Das Aluminiumblech auf dem Drehfuß ist mit Doppelklebeband befestigt.

Pied rotatif
Poser délicatement le BeoVision Avant sur le côté.
Enlever les 4 bandes masquant les orifices pratiqués dans la plaque de fond du pied rotatif.
Tourner le pied rotatif jusqu'à ce que les 4 orifices de la plaque de fond soient en regard des vis.
Dévisser les 4 vis pour déposer le pied rotatif.
Un ruban adhésif double face maintient la plaque d'aluminium sur le pied rotatif.

INSULATION TEST

Each set must be insulation tested after having been dismantled. Make the test when the set has been reassembled and is ready to be returned to the customer.

Flashovers must not occur during the testing procedure!

Make the insulation test as follows: Short-circuit the two pins of the mains plug and connect them to one of the terminals of the insulation tester. Connect the other terminal to ground on the aerial socket.

NOTE!
To avoid damaging the set it is essential that both terminals of the insulation tester have good contact.

Slowly turn the voltage control of the insulation tester until a voltage of 1.5 kV is obtained. Maintain that voltage for one second, then slowly turn it down again.

ISOLATIONSPRÜFUNG

Nach einer Zerlegung ist bei jedem Gerät eine Isolationsprüfung vorzunehmen. Die Prüfung wird dann ausgeführt, wenn das Gerät wieder vollständig zusammengebaut und zur Auslieferung an den Kunden bereit ist.

Überschläge dürfen während der Prüfung nicht vorkommen!

Die Isolationsprüfung in folgender Weise durchführen:
Die beiden Steckerstifte am Netzstecker kurzschließen und an eine der Anschlußklemmen des Isolationsprüfers anschließen. Die andere Anschlußklemme an die Masse des Antennenanschlußes anschließen.

ACHTUNG!
Um Beschädigungen des Gerätes zu vermeiden, ist es wichtig, daß beide Anschlußklemmen des Isolationsprüfers einen sehr guten Kontakt haben.

Die Spannungsregelung des Isolationsprüfers langsam nach oben drehen, bis eine Spannung von 1,5 kV erreicht wird. Diese Ein-stellung 1 Sekund aufrechterhalten, und anschließend die Spannung wieder langsam nach unten drehen.

TEST D'ISOLEMENT

Il convient de soumettre l'appareil à un test d'isolement après l'avoir désassemblé. Ce test est effectué après avoir réassemblé l'appareil et avant de la remettre au client.

Aucun amorçage doit se produire lors du test!

Procéder au test d'isolement comme suit:
Court-circuiter les deux broches de la fiche secteur et les raccorder à une des bornes du testeur d'isolement. Raccorder l'autre borne à la broche d'une des prises d'antenne.

ATTENTION!
Pour éviter d'endommager l'appareil, il est important que les deux bornes du testeur d'isolement possèdent un bon contact.

Tourner lentement la tension sur le testeur d'isolement jusqu'à arriver à 1,5 kV. Maintenir cette tension pour 1 seconde, puis la diminuer lentement de nouveau.

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3538842 11-94

PRINTED IN DENMARK BY BOGTRYKKERGÅRDEN AS, STRUER